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JANUARY 1980

VOLUME 31

NUMBER 1

# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



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NATIONAL OCEANIC AND  
ATMOSPHERIC ADMINISTRATION

ENVIRONMENTAL DATA AND  
INFORMATION SERVICE

NATIONAL CLIMATIC CENTER  
ASHEVILLE, N.C.



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NOTE: Late reports and corrections will be carried in the June and December issues of this publication. An explanatory page "Description of Charts" will be carried in the January and July issues.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

JANUARY 1980

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist  
Environmental Data and Information Service, NOAA

**HIGHLIGHTS:** Precipitation for January was above normal for much of the Nation. The area from north central Montana through South Dakota and northeastern Nebraska measured well below normal, as did the area from northern Arkansas to southeastern Michigan. The latter area had nearly adequate precipitation, although less than normal.

Temperatures averaged well below normal through the Pacific Northwest and the eastern slopes of the upper half of the Rockies. California and the southern Plateau area were much warmer than normal, while most of the Nation from the Central Plains eastward, in sharp contrast to the previous three Januaries, showed moderately above normal temperatures.

January began rather warm in many parts of the Nation. During the first week ending on the 6th, average temperatures ranged 6 to 9° warmer than normal in the northern Plains and northern Mississippi Valley. Most of the western Plateau and western Texas-eastern New Mexico area showed about 6° warmer than normal. Freezing temperatures dipped into northern Florida.

Seasonal precipitation fell in the Pacific Northwest; some of the weather systems moved straight east, dropping light to moderate snow through the northern tier of States. Elsewhere, a storm system from the Gulf of Mexico spread rain or snow northward through the central Appalachians and mid-Atlantic States and through the Southeast. The central Plains and southwest had little or no precipitation.

During the week of the 7th-13th, precipitation was moderate to heavy west of the Rockies and east of the Mississippi River. In the west, more than 2 inches fell over most of western Washington and Oregon and all but southeastern California. Moderate to heavy snow or rain fell from the Plateau to the western slopes of the Rockies. Most of the Plains had little or no precipitation.

Again, a storm moving out of the Gulf of Mexico spread rain in the south and snow through the mid-Atlantic

States. Another storm moving across the Great Lakes dropped snow in New England.

Cold air edged into the northern Plains. Average temperatures for the week in Montana ranged 12 to 15° colder than normal. Most of the Plateau, southwest, and south were warmer than normal. The central Plateau averaged 12° warmer.

Midmonth, the week of the 14th-20th, was rainy or snowy in much of the Nation. Only parts of the northern and extreme southern Plains received no precipitation. Winter storms moved from the central Rockies, across the Plains and western Great Lakes. A low pressure center formed in the southeast and caused rain from southeastern Texas to the mid-Atlantic coast.

During the third week, the entire Nation was warmer than normal. Only the extreme northwestern part of the country was near normal. The week's temperatures departed from normal by 15° in the northern Plains, 9° in California and the Appalachians, and 12° in New England.

During the last 10 days of January, the series of storms forming in the central Rockies began to move southeastward and off the southeast Coast. Moderate snow fell from southeastern Idaho to northwestern Kansas. Kansas, where major winter wheat fields are located, had acquired a good snowcover for protection from cold weather and wind. Moderate to heavy rain fell from central Texas through the southeastern United States.

Very cold temperatures chilled an area from the Pacific northwest over the Rockies and down the eastern slopes into New Mexico. Minimum temperatures ranged down to -25° in the Montana winter wheat area, where little snowcover protected the crop. The Southeast was warm through most of the period, but cold weather descended well into Florida by the end of the month.



## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

JANUARY 1980

STATE	Temperature						Precipitation				
	Monthly extremes						Monthly extremes				
	Station	Highest °F	Date	Station	Lowest °F	Date	Station	Greatest In.	Station	Least In.	
Alabama	Thomasville	78	20	2 Stations	15	31+	Hightower	8.14	Eufaula Wildlife Refuge	2.93	
Alaska	Sitka Japoneski FAA AP	52	21	Tok	-68	12	Little Port Walter	18.96	Umiat	T	
Arizona	Gila Bend	80	31+	Hawley Lake	-15	23	Crown King	13.54	Stephens Ranch	.12	
Arkansas	4 Stations	73	24	2 Stations	8	31	Crossett 2 SSE	7.47	Clinton	.62	
California	Blythe	84	16	Bodie	-13	30	Lodgepole	29.11	Death Valley	.35	
Colorado	Delhi	70	14	Taylor Park	-35	23	Wolf Creek Pass 1 E	15.66	Pueblo 6 SSW	.04	
Connecticut	Groton	60	11	Hartford-Brainard Field	1	31	2 Stations	1.89	Hartford WSO AP	.72	
Delaware	2 Stations	63	12+	Middletown 1 WSW	10	10	Lewes 1 SW	4.25	Middletown 1 WSW	2.22	
Florida	2 Stations	86	14+	Fountain 3 SSE	18	6	Niceville	7.10	Tavernier	.73	
Georgia	3 Stations	77	23+	Blairsville Exp Station	13	6	Norcross 4 N	9.37	Claxton	2.33	
Hawaii	Puukohola Heiau 98.1, HI	90	30	Kulani Camp 79, HI	31	25+	Haleakala R S 338, Maui	43.95	Kulani Mauka 76	.31	
Idaho	2 Stations	67	12	Stanley	-44	27	Centerville Arbaugh Ranch	6.96	Leadore 2	.26	
Illinois	8 Stations	62	17+	2 Stations	-7	31+	Rend Lake Dam	2.20	Bloomington Waterworks	.25	
Indiana	Rochester	66	12	Angola	-7	26	Salem	3.08	Monroeville 3 ENE	.51	
Iowa	4 Stations	60	13	Hawarden	-23	31	Montezuma 1 W	2.17	Akron	.19	
Kansas	2 Stations	73	14+	Washington	-17	31	Lindsborg	2.62	Yates Center	.30	
Kentucky	Paducah Sewage Plant	64	12	Lexington WSO AP	7	31	Middlesboro	6.20	Dix Dam	1.38	
Louisiana	2 Stations	80	20+	Converse	20	3	Delta-Breton Wildlife Refuge	11.96	Koran	3.32	
Maine	2 Stations	56	12	Van Buren 2	-25	10	Patten 4 WSW	3.63	West Buxton 2 NNW	.42	
Maryland	Salisbury FAA AP	64	11	Unionville	-8	6	Salisbury FAA AP	4.39	Oakland 1 SE	.96	
Massachusetts	Chester 2	62	12+	Cummington Hill	-9	30	Chatham WSMO	4.71	Great Barrington AP	.18	
Michigan	3 Stations	55	11	2 Stations	-28	10+	Houghton FAA AP	8.51	Benton Harbor Airport	.42	
Minnesota	3 Stations	55	14+	2 Stations	-39	23+	Long Prairie	2.01	Springfield 1 NW	.13	
Mississippi	Columbia	78	11	4 Stations	19	31+	Natchez	10.51	Clarksdale	2.81	
Missouri	3 Stations	70	25+	Edgerton	-18	31	New Madrid	2.67	Vichy FAA AP	.33	
Montana	Grass Range	59	14	Wisdom	-47	28	Haugen 3 E	4.31	Ridgway 1 S	T	
Nebraska	Beaver City	66	13	Nenzel 20 S	-27	31	Bennet	2.18	Arcadia	.00	
Nevada	Las Vegas WSO AP	71	12	Diamond Valley USDA	-24	30	Mount Rose Bowl	8.94	Dyer 4 SE	.30	
New Hampshire	2 Stations	59	12	Mount Washington	-28	24	Mount Washington	2.59	Concord WSO AP	.43	
New Jersey	Woodstown	61	12	Woodstown	3	10	Belvidere	3.41	Newton St Pauls Abbey	1.14	
New Mexico	Artesia 6 S	79	15	Beaverhead Ranger Station	-14	24	Chama	5.87	2 Stations	T	
New York	3 Stations	60	12	2 Stations	-21	31	Hooker 4 N	5.84	Peru 2 WSW	.16	
North Carolina	2 Stations	73	11	Grandfather Mountain	5	31	Hatteras	8.05	Asheville	2.47	
North Dakota	2 Stations	50	13	2 Stations	-36	30+	Forbes 9 NNW	1.89	Hettinger	.06	
Ohio	Ironton	63	18	2 Stations	-6	27+	Hamilton-Fairfield	3.41	Painesville 4 NW	.42	
Oklahoma	2 Stations	79	13	Hooker	-2	31	Idabel	3.93	Regnier	.54	
Oregon	Gold Beach Ranger Station	68	21	Austin 3 S	-24	28	Laurel Mountain	23.02	Pine Mtn Observatory	.36	
Pennsylvania	Uniontown 1 NE	64	12	Clermont 4 NW	-8	6	Newell	D 2.50	Paupack 2 WNW	.31	
Puerto Rico	2 Stations	92	19+	Adjuntas Substation	49	18	Pico Del Este	7.78	3 Stations	.00	
Rhode Island	Providence WSO AP	58	12+	Kingston	5	7	Kingston	1.69	Block Island WSO AP	.78	
South Carolina	Ridgeland 5 NE	71	9	Caesars Head	14	6	Greenwood	7.26	Beaufort 7 SW	2.98	
South Dakota	Midland	62	12	Camp Crook	-31	29	Webster Water Dept	1.22	3 Stations	T	
Tennessee	Cordell Hull Lock and Dam	70	25	Crossville FAA AP	10	31	Knoxville Exp Station	6.78	Martin U of T Branch	1.64	
Texas	2 Stations	87	27+	Follett	1	31	Anahuac TBCD	10.10	2 Stations	.00	
Utah	Callao	68	13	Woodruff	-34	31	Alta	16.70	Partoun	.38	
Vermont	2 Stations	58	12	Mount Mansfield	-17	30	Rochester	3.21	South Hero	.25	
Virginia	2 Stations	68	12+	Timberville 3 E	-1	6	Hopewell	D 6.52	Deerfield 1 S	2.49	
Virgin Islands	Truman Field FAA AP	91	9+	3 Stations	62	18+	Annaly	1.76	Charlotte Amalie 2	.29	
Washington	5 Stations	59	24+	Winthrop 1 WSW	-28	29	Carson Fish Hatchery	20.56	Ephrata FAA AP	.92	
West Virginia	3 Stations	66	12+	Spruce Knob	-8	30	Snowshoe	5.31	2 Stations	1.26	
Wisconsin	2 Stations	53	11	Minong 5 WSW	-34	9	Flambeau Reservoir	3.80	Beaver Dam	.53	
Wyoming	Sheridan Field Station	60	13	2 Stations	-43	29	Snake River	5.70	3 Stations	.09	



## JANUARY 1987

State and Station	Elevation (ground)	Pressure		Temperature				Precipitation				Wind				No. of days (sunrise to sunset)		% Sky cover, tenths (sunrise to sunset)															
		Station ID	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Average dew point		Average relative humidity	Total	Departure from normal	Greatest in 24 hours				No. of days	Snow, ice pellets	Resultant speed	Resultant direction	Speed	Direction									
										Date	No. of days																						
																Max. 32.2 °C or above	Min. 0 °C or lower																
ALABAMA	BIRMINGHAM U	207		11.3	2.6	6.9	-0.8	18.9	19	-5.6	31	0	11	2-2	73	161	33	58	15	0	305	279	2.3	1	26.8V	NE	29	10	5	16	6.2	44	
	BIRMINGHAM	199	996.6	1010.5	11.7	2.9	7.3	0.6	20.0	19	-5.6	31	0	10	2-2	73	168	45	11	0	650	279	2.0	9	15.3V	NE	8	9	19	7.1	33		
	BIRMINGHAM	160	995.9	1010.7	11.9	0.6	4.7	-0.2	16.7	19	-5.6	31	0	15	1.1	78	180	43	12	1	71	279	0.8	6	18.3V	SW	7	2	6	23	8.5		
	HUNTSVILLE	190	1010.8	1010.8	13.3	9.6	13.4	0.7	23.9	20	-1.1	31	0	3	7.2	70	126	6	14	2	0	0	0	0.8	6	10.7	5	8	19	7.1	6.1		
	MOBILE	18	1011.9	1010.3	15.7	5.6	10.7	2.1	21.7	20	-1.1	31	0	9	5.0	72	103	1	26	13	0	0	0	0.7	36	11.2	3	5	18	7.6	33		
	PONTOTOCO	59																															
ALASKA																																	
	ANCHORAGE	35	1006.1	1011.4	-5.2	-13.6	-9.8	-1.4	7.8	20	-27.2	1	8	30	-13.9	72	33	11	11	12	0	305	279	2.3	1	26.8V	NE	29	10	5	16	6.2	44
	ANCHORAGE	39	1007.2	1011.2	-5.1	-13.5	-9.7	-1.5	8.9	20	-27.2	1	8	30	-13.9	74	134	-40	33	4	0	71	279	0.8	6	18.3V	SW	7	2	6	23	8.5	
	BARROW	39	1023.7	1024.3	-23.1	-28.9	-25.5	0.3	8.9	27	-45.7	16	0	24	-5.0	74	134	-40	33	4	0	71	279	0.8	6	18.3V	SW	7	2	6	23	8.5	
	BARTER ISLAND	12	1021.3	1023.4	-23.2	-29.7	-26.5	0.3	5.0	27	-45.0	14	0	31	-29.4	75	22	-6	5	0	74	305	3.0	23	33.5V	N	7	13	5	18	7.1	6.1	
	BETHEL	38	1009.6	1015.8	-13.1	-22.3	-17.7	-2.7	3.3	26	-40.0	17	0	31	-29.4	75	22	-6	5	0	152	406	3.5	1	24.1V	NE	20	13	4	14	5.5	5.5	
	BETHEL	196	996.6	1023.2	-20.1	-31.7	-25.9	-0.8	8.9	1	-46.7	13	0	31	-29.4	75	22	-6	5	0	152	406	3.5	1	24.1V	NE	20	13	4	14	5.5	5.5	
	RIG DELTA	386			-17.6	-22.3	-22.3	-1.8	8.3	21	-47.8	13	0	31	-29.4	75	22	-6	5	0	152	406	3.5	1	24.1V	NE	20	13	4	14	5.5	5.5	
	COLD BAY	29	1005.4	1009.2	-17	-27	-24.7	-2.6	4.4	6	-18.3	1	0	26	-7.2	81	99	-28	43	15	0	358	279	1.8	3	23.2	16	4	10	5	16	6.4	4
	FAIRBANKS	133	1002.4	1021.0	-18.1	-27.9	-23.1	1.3	6.1	21	-45.6	13	0	31	-27.8	67	112	-2	7	0	274	305	0.4	5	12.1	15	20	9	4	18	6.6	4	
GULKANA	479			-15.1	-25.0	-20.3	1.5	5.0	22	-42.8	13	0	29	-27.8	67	112	-2	7	0	274	305	0.4	5	12.1	15	20	9	4	18	6.6	4		
HOOPER	19			-17	-11.0	-7.3	-1.4	5.6	20	-25.0	12	0	30	-17.8	63	112	68	33	12	0	333	508	2.1	8	18.1	9	18	10	4	17	6.2		
JUNEAU	4	1014.9	1015.6	-3.9	-10.0	-6.9	-2.2	7.2	5	-35.0	2	0	29	-17.8	63	87	13	20	17	0	1057	711	2.1	8	28.2V	E	20	13	5	13	5.3		
KING SALMON	15	1008.1	1010.3	-8.3	-17.3	-12.8	-2.4	7.2	5	-35.0	2	0	29	-17.8	63	87	13	20	17	0	292	152	2.1	8	28.2V	E	20	13	5	13	5.3		
KODIAK	4	1003.7	1008.0	1.7	-4.3	-3.0	-0.4	7.2	20	-35.0	14	0	23	-6.7	68	155	27	35	18	0	389	178	2.5	33	25.9V	N	10	10	7	14	6.1		
MOOSEWAT	3	1020.7	1021.2	1.6	-4.3	-3.0	-0.4	7.2	20	-35.0	14	0	23	-6.7	68	155	27	35	18	0	389	178	2.5	33	25.9V	N	10	10	7	14	6.1		
MCGRATH	105	1005.1	1018.9	-19.1	-34.4	-25.3	-2.6	5.0	18	-49.8	17	0	31	-28.3	74	42	20	18	10	0	564	737	0.6	34	17.8V	E	4	12	3	16	7.3		
NOME	4	1017.6	1018.3	-12.3	-24.3	-17.3	-2.8	1.1	26	-37.2	16	0	31	-24.7	68	37	14	10	0	414	660	2.3	9	14.8	9	18	9	5	15	5.4	32		
ST. PAUL ISLAND	7			-0.4	-9.9	-2.7	0.6	6.7	4	-19.4	19	0	33	-24.7	68	37	14	10	0	414	660	2.3	9	14.8	9	18	9	5	15	5.4	32		
TALKEETNA	105			-8.6	-18.8	-13.7	-1.1	2.2	19	-33.9	4	0	23	-17.8	68	37	14	10	0	216	152	2.3	9	25.9V	SE	23	1	9	21	7.9			
UNALASKA	11	1011.2	1012.0	-3.0	-9.1	-6.1	1.8	7.9	8	-16.9	14	0	30	-12.2	64	237	89	66	13	0	947	864	2.9	4	42.0V	N	10	10	3	18	6.3		
VALDEZ	9	1010.5	1011.4	-3.6	-9.7	-6.2	1.0	6.7	22	-24.2	11	0	26	-8.3	74	232	-31	79	15	0	851	914	3.1	9	21.5V	SE	19	5	4	22	7.7		
YAKUTAT																																	
ARIZONA																																	
	PHOENIX	2135		3.9	-5.3	-0.7	1.6	21.9	4	-17.8	24	0	27	5.0	61	166	118	50	16	0	1610	640	1.2	11	13.4V	SW	10	5	6	18	7.4	66	
	FLAGSTAFF	338	976.6	1015.7	8.5	13.7	3.0	3.0	23.9	24	-1.1	20	0	12	-0.6	48	19	1	6	8	1	0	0	1.4	17	13.9	8	4	19	6.5	68		
	TUSCON	788	926.5	1015.0	18.5	5.3	12.4	1.9	22.2	14	1.1	20	0	19	-0.6	48	19	1	6	8	1	0	0	1.4	17	13.9	8	4	19	6.5	68		
	WINKLOW	1492			8.4	3.5	3.5	3.5	17.2	13	-8.9	24	0	19	-0.6	48	19	1	6	8	1	0	0	1.4	17	13.9	8	4	19	6.5	68		
YUMA				21.6	9.4	15.6	2.6	25.6	13	4.4	22	0	0			14	4	7	4	0	0	0	0			14.3	5	29	10	5	16	6.0	77
ARKANSAS																																	
	FORT SMITH	136	1003.1	1020.1	9.6	-0.8	4.4	0.6	20.0	24	-8.3	31	0	23	-1.1	72	25	-35	6	10	0	25	25	1.0	2	13.9	M	24	4	9	18	7.3	38
	LITTLE ROCK	78	1010.5	1020.2	11.3	1.9	6.7	2.5	19.4	24	-5.0	31	0	12	0.0	67	69	-38	33	1	23	1	1.0	3									
	NO. LITTLE ROCK	165			9.8	-0.6	5.2	0.0	19.4	24	-7.8	31	0	16			72	-32	25	13	1	1.3	1.0			9.6	MW	11				68	
	CALIFORNIA																																
		BAKERSFIELD	145	999.3	1017.1	15.5	7.6	11.6	2.9	22.8	13	0.6	21	0	0	8.9	87	66	42	21	13	1	0	0	0.5	2	9.4		3	2	26	8.5	
		BISHOP	1252	872.7		12.5	-3.4	4.6	1.7	19.4	25	-7.8	4	0	27	-3.9	65	607	260	166	15	6	20	Y		22.8V		10	12	6	13	5.3	
		EL PASO	1609	836.8	1015.2	1.4	1.1	4.3	1.8	18.9	24	-8.3	29	0	12	-3.9	65	607	260	166	15	6	20	Y		22.8V		10	12	6	13	5.3	
EUREKA U		13			12.7	5.4	9.1	0.6	18.9	4	-4.7	28	0	3	7.8	89	97	51	25	13	0	0	0	0.5	13	9.8		8	15	6.7	46		
FRESNO		100	1005.4	1017.3	13.3	6.1	9.7	2.3	26.3	13	0.0	20	0	3	7.8	89	97	51	25	13	0	0	0	0.5	13	9.8		8	15	6.7	46		
LONG BEACH		8	1014.9	1016.1	19.3	10.1	14.7	2.6	26.7	2	4.0	20	0	0	8.3	69	125	61	11	0	0	0	0	0.5	13	9.8		8	15	6.7	46		
LOS ANGELES		30	1012.5	1016.1	23.1	11.6	15.4	2.9	26.1	2	6.1	19	0	0	8.9	71	177	113	62	15	0	0	0	0.5	20	1.2	13	28	8	4	19	6.7	46
LOS ANGELES		18			23.1	11.6	15.4	2.9	26.1	2	6.1	19	0	0	8.9	71	177	113	62	15	0	0	0	0.5	20	1.2	13	28	8	4	19	6.7	46
MT. SHASTA R		1072	890.6	1016.4	12.7	1.6	16.1	2.2	18.3	22	-1.3	20	0	22	-3.9	65	90	-22	27	14	0	36	381	0	0	7.6	31	24	9	3	19	6.5	
OAKLAND	2	1016.3	1016.4	14.1	6.7																												



# CLIMATOLOGICAL DATA

## METRIC UNITS

JANUARY 1980

State and Station	Elevation (ground)	Pressure		Temperature							Precipitation						Wind				No. of days (sunrise to sunset)	Sky cover, tenths (sunrise to sunset)	%☀																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Lowest	Date		Average relative humidity	Total	Departure from normal	Greatest in 24 hours	No. of days	Maximum depth on ground	Snow, ice pellets	Resultant speed	Resultant direction				Speed	Direction																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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## CLIMATOLOGICAL DATA

METRIC UNITS

JANUARY 1989

State and Station	Pressure		Temperature										Precipitation					Wind				No. of days (sunrise to sunset)			Possible sunshine																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
	Elevation (ground)	Station Q	Sea level	Average maximum		Average minimum		Average	Departure from normal	Highest	Date	Lowest	Date	No. of days		Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	25 mm. or more					With thunderstorms	No. of days	Snow, ice pellets	Resultant speed	Resultant direction	Speed	Direction	Fastest mile (1.6 kilometers)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
				mb	mb	C	F							C	F							C	F	C										F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C

## CLIMATOLOGICAL DATA

METRIC UNITS

JANUARY 1960

State and Station	Elevation (ground)	Pressure		Temperature						Precipitation						Wind				No. of days (sunrise to sunset)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Lowest	Date		Max 32.2 °C or above	Min. 0 °C or lower	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	No. of days			Snow, ice pellets		Resultant speed	Resultant direction	Speed	Direction	Date																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
										No. of days	No. of days											Total	mm						mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm



# CLIMATOLOGICAL DATA

## METRIC UNITS

JANUARY 1963

State and Station	Elevation (ground)	Pressure		Temperature				Precipitation				Wind				No. of days (sunrise to sunset)		Possible sunshine																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
		Station	Sea level	Average maximum	Average minimum	Average from normal	Highest	Lowest	Date	No. of days		Average dew point	Average relative humidity	Total	Departure from normal				Greatest in 24 hours	25 mm. or more	With thunderstorms	Snow, ice pellets	Maximum depth on ground	Resultant speed	Resultant direction	Fastest mile (1.6 kilometers)		Direction	Date	Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10	Sky cover, tenths (sunrise to sunset)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
										Max 32.2 °C or above	Min 0 °C or lower					mm	mm									mm	mm							mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm

## JANUARY 1980

- 10 -



## CLIMATOLOGICAL DATA

METRIC UNITS

JANUARY 1980

State and Station	Pressure		Temperature										Precipitation				Wind				No. of days (sunrise to sunset)		Sky cover, tenths (sunrise to sunset)	Possible sunshine %						
	Station Q	Sea level mb	Elevation (ground) m	Average maximum °C	Average minimum °C	Average °C	Departure from normal °C	Highest °C	Date	Lowest °C	Date	No. of days Max 32.2 °C or above Min. 0 °C or lower	Average dew point °C	Total mm	Departure from normal mm	Greatest in 24 hours mm	25 mm. or more No. of days	Snow, ice pellets mm	Maximum depth on ground mm	Resultant speed m/s					Resultant direction	Fastest mile (1.6 kilometers)				
																					Speed	Direction								
																										Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10		
WASHINGTON	122	1000.0		4.4	-1.3	1.6	-1.9	11.1	1	-9.4	29	0	-3.9	104	-4.3	30	16	0	224	203	1.7	13	19.2	SW	12	6	19	7.3	36	
	718	932.6	1016.5	-2.7	-9.8	-6.3	-2.6	6.1	14*	-21.1	7	0	-11.1	50	-13	10	14	0	422	239	0.7	7	17.4	SW	12	4	3	24	7.9	38
	1206	875.7		-4.7	-10.1	-7.4	-2.4	8.9	23	-20.0	29+	0	31	207	-12.0	49	17	0	1966	2235					2	2	22	7.5	23	
	289			0.9	-5.3	-2.2	-2.9	15.0	14	-15.6	30	0	25	79	26	19	15	0	371	305			14.3	SE	12	5	24	8.4	23	
	321	981.0	1021.2	-1.5	-11.0	-6.2	-3.7	8.3	12	-24.4	29+	0	-9.4	57	79	23	20	13	0	447	330	1.3	98	8.9	SE	12	5	6	23	7.4
WEST INDIES																														
	h	1014.6	1017.1	28.9	22.4	25.7	1.6	32.2	24	18.3	16	1	20.0	44	-50	21	13	0	0	0	2.1	6	12.5	E	11	4	24	3	5.1	76
WEST VIRGINIA																														
	763	927.9	1019.6	3.1	-4.4	-0.7	-0.3	12.8	11	-13.3	31+	0	-3.9	85	-3	19	16	0	536	203	3.8	27	13.0	SS	11	2	29	9.4		
	310	984.1	1020.5	4.7	-2.4	1.2	-0.2	17.9	11	-10.0	30	0	-3.3	72	-14	13	16	0	297	127	1.1	26	10.3	SS	11	0	4	27	9.3	
	594	986.5		3.1	-5.3	-1.1	0.0	15.0	11	-16.1	30	0	28	70	-14	14	19	0	584	127	3.7	27	13.4	SS	11	1	2	28	9.4	
	252	988.8	1019.8	4.8	-1.9	1.4	0.2	16.7	11	-16.6	31	0	-4.4	62	-18	17	14	0	234	102	5.5	29	12.5	SS	11	0	3	28	9.4	
PARKERSBURG U	187			3.4	-2.9	0.3	-0.2	15.0	17	-10.0	31+	0	22	35	-44	12	9	0	333	152			14.8	W	11	0	3	28	9.4	30
WISCONSIN																														
	208	991.5	1018.4	-3.7	-12.3	-7.9	1.3	8.3	11	-23.3	9	0	-11.7	49	21	29	11	0	185	102	2.3	27	17.0	SS	6	9	16	6.8	49	
	198	994.6	1020.4	-3.2	-11.9	-7.5	1.3	8.3	11	-23.9	29	0	-10.0	41	17	8	0	0	272	51	1.3	29	13.4	SS	11	5	7	19	7.2	40
	262	986.8	1019.8	-3.8	-12.6	-8.2	3.3	8.9	11	-21.7	9	0	-12.2	29	-4	15	11	0	124	51	1.7	27	13.4	SS	11	5	7	19	7.2	40
	205	992.6	1019.0	-2.6	-9.9	-6.3	0.7	11.1	11	-19.4	27	0	-9.4	42	1	12	13	0	295	152	3.2	27	21.5	W	7*	5	6	20	7.5	35
WYOMING																														
	1627	834.4	1019.2	-2.0	-15.4	-8.7	-3.8	8.9	5	-35.6	28	0	-12.8	21	9	6	11	0	561	254	4.0	23	17.9	SS	12	7	3	21	7.4	
	1867	807.0	1017.2	3.4	-11.3	-3.4	-2.4	12.8	14	-27.2	26	0	-12.8	69	57	30	9	0	992	504	3.7	29	22.6	W	24	5	9	17	7.1	34
	1696	825.9	1021.0	-2.7	-17.4	-10.0	-3.1	11.7	5	-32.8	29+	0	-14.4	24	12	11	9	0	665	305	6.8	22	20.6	SS	12	6	9	17	6.8	36
	1208	877.1	1020.5	-1.9	-16.2	-9.0	-2.9	15.0	12	-31.7	29+	0	-14.4	15	-2	5	9	0	307	152	1.9	33	15.6	SS	11	4	9	18	7.1	59

## HEATING DEGREE DAYS

(Base 65°F.)

JANUARY 1980

State and Station	Current season			State and Station	Current season			State and Station	Current season			State and Station	Current season		
	This month	Period July through this month	Normals July through this month		This month	Period July through this month	Normals July through this month		This month	Period July through this month	Normals July through this month		This month	Period July through this month	Normals July through this month
ALABAMA				IDAHO				NEBRASKA				TENNESSEE			
BIRMINGHAM U	628	1778	1579	BOISE	1070	3231	3437	GRAND ISLAND	1340	3667	3781	RRISTOL	832	2471	2598
BIRMINGHAM	604	1656	1802	LEWISTON	1122	3022	3269	LINCOLN	1281	3489	3688	CHATTANOOGA	745	2078	2181
HUNTSVILLE	753	2088	2059	POCATELLO	1245	3934	4063	NOPFOLK	1332	3835	4092	KNOXVILLE	715	2042	2144
MONTIE	267	960	1086	ILLINOIS				NORTH PLATTE	1233	3573	3933	MEMPHIS	669	1769	2023
MONTGOMERY	420	1244	1467	CAIRO U	856	2216	2362	OMAHA (EPPLY)	1318			NASHVILLE	777	2172	2279
ALASKA				CHICAGO O HARE	1281	3449	3729	OMAHA (NORTH)	1267	3541	3878	OAK RIDGE	804	2368	2407
ANCHORAGE	1568	5650	6523	MOLINE	1290	3675	3747	SCOTTSBLUFF	1295	3653	3893	TEXAS			
ANNETTE	1050	3639	3965	PEORIA	1279	3598	3582	VALENTINE	1408	4051	4196	ABILENE	926	2675	2508
BARROW	2450	10026	11678	ROCKFORD	1411	3992	3967	NEVADA				AMARILLO	626	2675	2508
BARTER ISLAND	2500	10171	10922	SPRINGFIELD	1146	3110	3288	ELKO	1013	3334	4310	AUSTIN	425	1091	1126
BETHEL	2007	7524	7562	INDIANA				ELY	1136	3883	4355	PROSVILLE	108	411	410
BETTTLES	2472	8889	9591	EVANSVILLE	982	2733	2798	LAS VEGAS	474	1459	1690	CORPUS CHRISTI	195	565	611
BIG DELTA	2267	7524	8434	FORT WAYNE	1240	3606	3568	RENO	865	3010	3456	DALLAS FT WORTH	597	1479	1503
COLD BAY	1279	5324	5383	INDIANAPOLIS	1123	3244	3276	WINNEHUECA	995	3315	3810	DEL RIO	336	925	1061
FAIRBANKS	2312	7802	8891	SOUTH BEND	1172	3218	3670	NEW HAMPSHIRE				EL PASO	555	1810	1796
GULKANA	2164	7608	8627	IOWA				CONCORD	1317	3932	4162	GALVESTON	268	777	744
HOMER	1426	5451	5989	DES MOINES	1281	3520	3927	MT WASHINGTON OBS	1867	7551	7722	HOUSTON INTERCON	308	1021	928
JUNEAU	1404	4901	5244	DUBUQUE	1363	3935	4235	NEW JERSEY				LUBBOCK	756	2129	2194
KING SALMON	1733	6395	6716	SIoux CITY	1339	3868	4126	ATLANTIC CITY	1053	2812	2795	MIDLAND	619	1710	1692
KODIAK	1090	4442	4921	WATERLOO	1418	3940	4342	ATLANTIC CITY U	906	2328	2502	PORT ARTHUR	306	989	981
KOTZEBUE	2207	8446	8803	KANSAS				NEWARK	953	2432	2829	SAN ANGELO	578	1607	1466
MC GRATH	2434	8182	8834	CONCORDIA	1184	3152	3129	TRENTON U	988	2584	2805	SAN ANTONIO	336	950	1035
MC	1990	7667	7961	DODGE CITY	1171	3198	2994	NEW MEXICO				VICTORIA	299	891	795
ST. PAUL ISLAND	1165	5187	5915	GOODLAND	1251	3474	3531	ALBUQUERQUE	763	2489	2657	WACO	562	1472	1321
TALKRETTA	1790	5660	7014	TOPEKA	1123	3088	3153	CLAYTON	981	2986	2994	WICHITA FALLS	682	1766	1835
UNALAKLEET				WICHITA	1038	2732	2840	ROSSELL	773	2265	2386	UTAH			
VALDEZ	1353	5484	6215	KENTUCKY				NEW YORK				MILFORD	1036	3441	3747
YAKUTAT	1249	4830	5422	COVINGTON	1080	3004	2972	ALBANY	1259	3601	3911	SALT LAKE CITY	964	3074	3512
ARIZONA				LEXINGTON	1005	2764	2808	RINGHAMTON	1278	3823	4054	VERMONT			
FLAGSTAFF	1056	4043	4033	LOUISVILLE	969	2558	2770	BUFFALO	1278	3457	3788	BURLINGTON	1350	3989	4410
PHOENIX	254	746	1015	LOUISIANA				NEW YORK U	963	2369	2698	VIRGINIA			
TUCSON	323	903	1095	RATON ROUGE	379	1194	1094	NEW YORK KENNEDY	1010	2696	2819	LYNCHBURG	892	2435	2530
WINSLOW	872	2825	2896	LAKE CHARLES	336	1045	966	NEW YORK LA GUARDIA	997	2573	2716	NORFOLK	759	1837	2016
YUMA	155	410	692	NEW ORLEANS	278	917	949	POCHESTER	1264	3598	3703	RICHMOND	806	2107	2363
ARKANSAS				SHREVEPORT	568	1424	1390	SYRACUSE	1215	3451	3688	ROANOKE	848	2434	2559
FORT SMITH	769	2166	2104	MAINE				NORTH CAROLINA				WALLOPS ISLAND	834	2064	2363
LITTLE ROCK	645	1749	2105	CARIBOU	1493	4995	5397	ASHEVILLE	753	2276	2535	WASHINGTON			
NO. LITTLE ROCK	728	1930	1956	PORTLAND	1305	3942	4134	CAPE HATTERAS R	587	1394	1500	OLYMPIA	1027	3189	3140
CALIFORNIA				MARYLAND				CAPE HATTERAS R				OUTLAYUTE	905	2981	3276
BAKERSFIELD	373	925	1404	BALTIMORE	962	2482	2745	CHARLOTTE	726	1950	1990	SEATTLE	872	2500	2680
BISHOP	759	2436	2558	MASSACHUSETTS				GREENSBORO	817	2180	2336	SEATTLE-TACOMA	929	2679	2932
BLUE CANYON	777	2784	2839	BLUE HILL OBS R	1183	3317	3475	RALEIGH	753	2017	2146	SPOKANE	1365	3871	4026
EUREKA U	511	1980	2555	BOSTON	1096	2940	3081	WILMINGTON	543	1419	1497	STAMPEDE PASS R	1425	5108	5235
FRESNO	473	1407	1641	WORCESTER	1235	3626	3801	NORTH DAKOTA				WALLA WALLA U	1137	2942	2946
LONG BEACH	195	567	844	MICHIGAN				BISMARCK				YAKIMA	1364	3675	3672
LOS ANGELES	161	450	932	ALPENA	1396	4452	4655	FARGO	1808	5260	5374	WEST VIRGINIA			
LOS ANGELES U	128	302	639	DETROIT	1168			WILLISTON	1775	4991	5332	BECKLEY	1053	3183	3268
MT SHASTA R	684	3145	3255	DETROIT METRO	1249	3664	3624	OHIO				CHARLESTON	951	2675	2740
OAKLAND	381	1136	1615	FLINT	1262	3699	3939	AKRON	1179	3449	3528	ELKINS	1080	3392	3464
RED BLUFF	460	1376	1612	GRAND RAPIDS	1250	3523	3609	CINCINNATI ABBE CB	1037	2871	2863	HUNTINGTON	936	2583	2747
SACRAMENTO	551	1600	1678	HOUGHTON LAKE	1416	4412	4648	CLEVELAND	1218	3376	3434	PARKERSBURG U	998	2784	2836
SAN DIEGO	117	332	776	LAKE CHARLES	336	1045	966	COLUMBUS	1099	3137	3323	WISCONSIN			
SAN FRANCISCO	441	1401	1663	MUSKEGON	1277	3792	3787	DAYTON	1145	3235	3274	GREEN BAY	1461	4346	4589
SAN FRANCISCO U	366	1235	1681	SAULT STE MARIE	1541	4987	5028	MANSFIELD	1214	3599	3318	LA CROSSE	1438	4154	4321
SANTA MARIA	307	1164	1596	MINNESOTA				TOLEDO	1258	3601	3656	MADISON	1471	4239	4439
STOCKTON	473	1389	1684	DULUTH	1745	5214	5514	YOUNGSTOWN	1250	3547	3614	MILWAUKEE	1368	3752	4165
COLORADO				INTERNATIONAL FALLS	1951	6190	6113	OKLAHOMA				WYOMING			
ALAMOSA	1363	5154	5048	MINNAPOLIS	1536	4426	4730	OKLAHOMA CITY	823	2137	2283	CASPER	1505	4452	4227
COLORADO SPRINGS	1180	3696	3640	ROCHESTER	1533	4418	4742	TULSA	812	2059	2282	CHEYENNE	1321	4006	3993
DENVER	1204	3509	3388	ST CLOUD	1679	4967	5136	OREGON				LANDER	1578	4584	4526
GRAND JUNCTION	999	3331	3431	MISSISSIPPI				ASTORIA				SHERIDAN	1523	4261	4374
PUEBLO	1135	3316	3190	JACKSON	540	1639	1465	RURNS U	1227	3008	4133				
CONNECTICUT				MERIDIAN	489	1492	1547	EUGENE	901	2604	2682				
BRIDGEPORT	1025	2846	2919	MISSOURI				MEDFORD	807	2469	2452				
HARTFORD	1151	3334	3600	COLUMBIA REGIONAL	1101	2997	3027	PENDELTON	1210	3316	3139				
DELAWARE				KANSAS CITY	1118	3048	3210	PORTLAND	920	2386	2748				
WILMINGTON	1004	2649	2827	ST JOSEPH	1104	3078	3266	SALEM	905	2652	2735				
DIST. OF COLUMBIA				ST LOUIS	1035	2694	2846	SEXTON SUMMIT R	863	3104	3372				
WASHINGTON DULLES	993	2628	2924	SPRINGFIELD	877	2452	2747	PENNSYLVANIA							
WASHINGTON NATIONAL	657	2060	2481	MONTANA				ALLENTOWN							
FLORIDA				BILLINGS				ERIE							
APPALACHICOLA U	326	816	866	GLASGOW	1788	4740	5160	HAPRISHRUP	1070	2940	3066				
DAYTONA BEACH	274	492	550	GREAT FALLS	1538	4033	4130	PHILADELPHIA	1021	2646	2789				
FORT MYERS	85	143	284	HAYRE	1644	4416	5058	PITTSBURGH	1175	3309	3418				
JACKSONVILLE	356	850	845	HELENA	1566	4457	4751	SEPCANTON	1144	3217	3580				
KANSASVILLE	12	12	34	KALISPELL	1679	4571	4968	WILLIAMSPORT	1141	3264	3435				
KEY WEST	50	66	122	MILES CITY	1595	4268	4599	RHODE ISLAND							
ORLANDO	161	327	442	MISSOULA	1516	4367	4659	BLOCK ISLAND	976	2537	2936				
ORLANDO	293	898	1007					PROVIDENCE							
TALLAHASSEE	385	1091	1019					SOUTH CAROLINA							
TAMPA	136	295	443					CHARLESTON							
WEST PALM BEACH	96	173	183					CHARLESTON U							
GEORGIA								COLUMBIA							
ATHENS	609	1611	1858					GRNVILLE-SPRTNBRE							
ATLANTA	616	1622	1921					SOUTH DAKOTA							



# COOLING DEGREE DAYS

(Base 65°F.)

JANUARY 1980

State and station	Current season			State and station	Current season			State and station	Current season			State and station	Current season		
	This month	Period January through this month	Normal January through this month		This month	Period January through this month	Normal January through this month		This month	Period January through this month	Normal January through this month		This month	Period January through this month	Normal January through this month
ALABAMA				HAWAII				NEBRASKA				SOUTH CAROLINA			
BIRMINGHAM U	0	0	12	HILO	213	213	192	GRAND ISLAND	0	0	0	CHARLESTON	0	0	12
BIRMINGHAM	0	0	9	HONOLULU	222	222	226	LINCOLN	0	0	0	CHARLESTON U	0	0	16
HUNTSVILLE	0	0	0	KAHULUI	266	266	208	MORFOLK	0	0	0	COLUMBIA	0	0	8
MOBILE	2	2	23	LIHUE	229	229	196	NORTH PLATTE	0	0	0	GRNVILLE-SPRTNBRG	0	0	0
MONTGOMERY	0	0	14					OMAHA (EPPELY)	0	0	0				
ALASKA				IDAHO				OMAHA (NORTH)	0	0	0	SOUTH DAKOTA			
ANCHORAGE	0	0	0	BOISE	0	0	0	SCOTTSBLUFF	0	0	0	ABERDEEN	0	0	0
ANNETTE	0	0	0	LEWISTON	0	0	0	VALENTINE	0	0	0	HURON	0	0	0
NARROW	0	0	0	POCATELLO	0	0	0					RAPID CITY	0	0	0
BARTER ISLAND	0	0	0					NEVADA				SIOUX FALLS	0	0	0
BETHEL	0	0	0	ILLINOIS				ELKO	0	0	0				
BETTES	0	0	0	CAIRO U	0	0	0	ELY	0	0	0	TENNESSEE			
BIG DELTA	0	0	0	CHICAGO O HARE	0	0	0	LAS VEGAS	0	0	0	BRISTOL	0	0	0
COLD BAY	0	0	0	MOLINE	0	0	0	RENO	0	0	0	CHATTANOOGA	0	0	0
FAIRBANKS	0	0	0	PEORIA	0	0	0	WINNEMUCCA	0	0	0	KNOXVILLE	0	0	0
GULKANA	0	0	0	ROCKFORD	0	0	0					MEMPHIS	0	0	0
HOMER	0	0	0	SPRINGFIELD	0	0	0	NEW HAMPSHIRE				NASHVILLE	0	0	0
JUNEAU	0	0	0					CONCORD	0	0	0	OAK RIDGE	0	0	0
KING SALMON	0	0	0	INDIANA				MT WASHINGTON OBS	0	0	0				
KODIAK	0	0	0	EVANSVILLE	0	0	0					TEXAS			
KOTZEBUE	0	0	0	FORT WAYNE	0	0	0	NEW JERSEY				ABILENE	0	0	0
MC GRATH	0	0	0	INDIANAPOLIS	0	0	0	ATLANTIC CITY	0	0	0	AMARILLO	0	0	0
NOME	0	0	0	SOUTH BEND	0	0	0	ATLANTIC CITY U	0	0	0	AUSTIN	5	5	5
ST. PAUL ISLAND	0	0	0					NEWARK	0	0	0	BROWNSVILLE	83	83	79
TALKEETNA	0	0	0	IOWA				TRENTON U	0	0	0	CORPUS CHRISTI	45	45	34
UNALASKEET	0	0	0	DES MOINES	0	0	0					DALLAS FT WORTH	0	0	0
VALDEZ	0	0	0	DUBUQUE	0	0	0	NEW MEXICO				EL PASO	0	0	0
YAKUTAT	0	0	0	SIOUX CITY	0	0	0	ALBUQUERQUE	0	0	0	GALVESTON	2	2	20
				WATERLOO	0	0	0	CLAYTON	0	0	0	HOUSTON INTERCON	4	4	16
ARIZONA								ROSWELL	0	0	0	LUBBOCK	0	0	0
FLAGSTAFF	0	0	0	KANSAS								MIDLAND	0	0	0
PHOENIX	0	0	0	CONCORDIA	0	0	0	NEW YORK				PORT ARTHUR	8	8	17
TUCSON	0	0	0	DODGE CITY	0	0	0	ALBANY	0	0	0	SAN ANGELO	0	0	0
WINSLOW	0	0	0	GOODLAND	0	0	0	BINGHAMTON	0	0	0	SAN ANTONIO	11	11	8
YUMA	4	4	10	TOPEKA	0	0	0	BUFFALO	0	0	0	VICTORIA	15	15	16
				WICHITA	0	0	0	NEW YORK U	0	0	0	WACO	0	0	0
ARKANSAS								NEW YORK KENNEDY	0	0	0	WICHITA FALLS	0	0	0
FORT SMITH	0	0	0	KENTUCKY				NEW YORK LA GUARDIA	0	0	0				
LITTLE ROCK	0	0	0	COVINGTON	0	0	0	ROCHESTER	0	0	0	UTAH			
NO. LITTLE ROCK	0	0	0	LEXINGTON	0	0	0	SYRACUSE	0	0	0	MILFORD	0	0	0
				LOUISVILLE	0	0	0					SALT LAKE CITY	0	0	0
CALIFORNIA								NORTH CAROLINA							
BAKERSFIELD	4	4	0	LOUISIANA				ASHEVILLE	0	0	0	VERMONT			
RISHOP	0	0	0	BATON ROUGE	0	0	17	CAPE HATTERAS R	0	0	0	BURLINGTON	0	0	0
BLUE CANYON	0	0	0	LAKE CHARLES	6	6	21	CHARLOTTE	0	0	0				
EUREKA U	0	0	0	NEW ORLEANS	10	10	28	GREENSBORO	0	0	0	VIRGINIA			
FRESNO	0	0	0	SHREVEPORT	1	1	0	PALEIGH	0	0	0	LYNCHBURG	0	0	0
LONG BEACH	3	3	5					WILMINGTON	0	0	9	NORFOLK	0	0	0
LOS ANGELES	3	3	5	MAINE								RICHMOND	0	0	0
LOS ANGELES U	10	10	10	CARIBOU	0	0	0	NORTH DAKOTA				ROANOKE	0	0	0
MT SHASTA R	0	0	0	PORTLAND	0	0	0	BISMARCK	0	0	0	WALLOPS ISLAND	0	0	0
OAKLAND	0	0	0					FARGO	0	0	0				
RED BLUFF	0	0	0	MARYLAND				WILLISTON	0	0	0	WASHINGTON			
SACRAMENTO	0	0	0	BALTIMORE	0	0	0					OLYMPIA	0	0	0
SAN DIEGO	2	2	10					OHIO				QUILLAYUTE	0	0	0
SAN FRANCISCO	0	0	0	MASSACHUSETTS				AKRON	0	0	0	SEATTLE	0	0	0
SAN FRANCISCO U	0	0	0	BLUE HILL OBS R	0	0	0	CINCINNATI ABBE OB	0	0	0	SEATTLE-TACOMA	0	0	0
SANTA MARIA	0	0	0	BOSTON	0	0	0	CLEVELAND	0	0	0	SPOKANE	0	0	0
STOCKTON	0	0	0	WORCESTER	0	0	0	COLUMBUS	0	0	0	STARPEDE PASS R	0	0	0
								DAYTON	0	0	0	WALLA WALLA U	0	0	10
COLORADO				MICHIGAN				WANSFIELD	0	0	0	YAKIMA	0	0	0
ALAMOSA	0	0	0	ALPENA	0	0	0	TOLEDO	0	0	0				
COLORADO SPRINGS	0	0	0	DETROIT	0	0	0	YOUNGSTOWN	0	0	0	WEST INDIES			
DENVER	0	0	0	DETROIT PETRO	0	0	0					SAN JUAN P.R.	414	414	322
GRAND JUNCTION	0	0	0	FLINT	0	0	0	OKLAHOMA							
PUEBLO	0	0	0	GRAND RAPIDS	0	0	0	OKLAHOMA CITY	0	0	0	WEST VIRGINIA			
				HOUGHTON LAKE	0	0	0	TULSA	0	0	0	BECKLEY	0	0	0
CONNECTICUT				LANSING	0	0	0					CHARLESTON	0	0	0
BRIDGEPORT	0	0	0	MUSKOGEE	0	0	0	OREGON				ELKINS	0	0	0
HARTFORD	0	0	0	SAULT STE MARIE	0	0	0	ASTORIA	0	0	0	HUNTINGTON	0	0	0
								BURNS U	0	0	0	PARKERSBURG U	0	0	0
DELAWARE				MINNESOTA				EUGENE	0	0	0				
WILMINGTON	0	0	0	DULUTH	0	0	0	MEDFORD	0	0	0	WISCONSIN			
				INTERNATIONAL FALLS	0	0	0	PENDLETON	0	0	0	GREEN BAY	0	0	0
DIST. OF COLUMBIA				MINNEAPOLIS	0	0	0	PORTLAND	0	0	0	LA CROSSE	0	0	0
WASHINGTON DULLES	0	0	0	ROCHESTER	0	0	0	SALEM	0	0	0	MADISON	0	0	0
WASHINGTON NATIONAL	0	0	0	ST CLOUD	0	0	0	SEXTON SUMMIT P	0	0	0	MILWAUKEE	0	0	0
FLORIDA				MISSISSIPPI				PACIFIC AREA				WYOMING			
APPALACHICOLA U	2	2	18	JACKSON	0	0	14	GUAM TAGUAC R	358	358	381	CASPER	0	0	0
DAYTONA BEACH	12	12	37	MERIDIAN	0	0	14	JOHNSTON	404	404	366	CHEYENNE	0	0	0
FORT MYERS	95	95	81					KOROR	496	496	502	LANDER	0	0	0
JACKSONVILLE	1	1	25	MISSOURI				KWJALEIN	528	528	502	SHERIDAN	0	0	0
KEY WEST	200	200	193	COLUMBIA REGIONAL	0	0	0	MAJUARO	519	519	490				
MIAMI	138	138	121	KANSAS CITY	0	0	0	PAGO PAGO	507	507	474				
ORLANDO	27	27	52	ST JOSEPH	0	0	0	PONAPE R	531	531	484				
PENSACOLA	2	2	27	ST LOUIS	0	0	0	TRUK MOEN ISLAND	507	507	496				
TALLAHASSEE	0	0	23	SPRINGFIELD	0	0	0	WAKE	400	400	372				
TAMPA	45	45	60					YAP R	496	496	477				
WEST PALM BEACH	75	75	98	MONTANA											
				BILLINGS	0	0	0	PENNSYLVANIA							
GEORGIA				GLASGOW	0	0	0	ALLENSTOWN	0	0	0				
ATHENS	0	0	0	GREAT FALLS	0	0	0	ERIE	0	0	0				
ATLANTA	0	0	0	HAVRE	0	0	0	HARRISBURG	0	0	0				
AUGUSTA	0	0	6	HELENA	0	0	0	PHILADELPHIA	0	0	0				
COLUMBUS	0	0	10	KALISPELL	0	0	0	PITTSBURGH	0	0	0				
WAFON	0	0	10	MILES CITY	0	0	0	SCRANTON	0	0	0				
ROME	0	0	15	MISSO											

## JANUARY 1980

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## Average monthly values

JANUARY 1981

ALBANY, NY 1008 MB											ALBUQUERQUE, NM 837 MB											AMBUERTO, TX 890 MB											ANCHORAGE, AK 1007 MB											ANNETTE, AK 1010 MB										
Standard pressure surface mb		No of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		No of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		No of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		No of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind														
54C	31	88	-5.5	-10.2	30	2.3	31	1,619	-3	-3.5	05	1.0	31	1,095	-1.9	-6.5	31	1.2	31	45	-10.3	-14.6	01	2.2	31	37	-1.3	-5.1	10	1.7	20	202	-9.5	-14.5	01	3.9	23	192	-2	-6.2	08	2.3												
1000	26	170	-5.2	-10.1	30	2.1																																																
950	31	548	-7.2	-10.4	30	5.1																																																
900	31	965	-8.3	-13.3	30	7.9																																																
850	31	1,413	-8.5	-16.9	29	10.4																																																
800	31	1,982	-9.7	-19.4	29	12.3																																																
750	31	2,570	-11.1	-22.9	28	15.8																																																
700	31	3,007	-13.2	-24.0	28	17.0																																																
650	31	3,469	-15.5	-26.3	27	19.7																																																
600	31	4,005	-18.6	-28.9	27	22.6																																																
550	31	4,714	-22.4	-31.8	26	24.6																																																
500	31	5,408	-26.2	-36.2	27	28.7																																																
450	31	6,163	-31.0	-46.5	27	27.9																																																
400	31	6,989	-36.5	-55.5	27	28.6																																																
350	31	7,906	-42.5	-69.4	26	32.9																																																
300	30	8,930	-49.2		27	31.9																																																
250	30	10,110	-55.2		26	31.2																																																
200	31	11,531	-55.3		26	30.8																																																
170	29	13,381	-54.9		27	29.9																																																
140	28	15,370	-54.5		27	27.8																																																
125	27	16,950	-55.9		27	25.7																																																
100	26	19,548	-58.3		27	24.1																																																
80	23	17,387	-60.0		27	20.3																																																
60	21	16,204	-60.9		27	19.7																																																
40	22	19,160	-61.4		27	18.6																																																
50	20	20,308	-62.0		27	15.6																																																
40	19	21,686	-64.1		27	15.2																																																
30	14	23,455	-64.8		28	16.3																																																
25	12	24,662	-63.1		27	19.6																																																
20	12	25,945	-62.8																																																			
15	10	27,733	-60.6																																																			
10	5	30,320	-54.7																																																			

## Average monthly values

JANUARY 1980

CARIBBEAN, ME 869 MB										CENTREVILLE, AL 1007 MB										CHARLESTON, SC 1017 MB										CHATHAM, GA 1013 MB										CHIHUAHUA, MEXICO 857 MB									
Standard pressure surface mb		No. of observations	Dynmic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Resultant Wind Speed m.p.s.	No. of observations	Dynmic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Resultant Wind Speed m.p.s.	No. of observations	Dynmic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Resultant Wind Speed m.p.s.	No. of observations	Dynmic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Resultant Wind Speed m.p.s.	No. of observations	Dynmic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Resultant Wind Speed m.p.s.																		
1000	31	1	191	-11.9	-16.9	28	5.1	31	140	5.4	1.7	02	6	31	13	6.9	4.3	32	1.7	29	16	-1.1	-5.7	32	0.4	31	1,428	4.6	-2.1	25	1.7																		
950	7	2	193	-11.5	-15.9			23	174	5.3	2.0	05	1.0	30	159	8.4	4.4	31	1.1	26	136	-1.2	-6.0	32	1.1																								
900	1	4	195	-11.2	-15.2	29	5.0	2	579	5.7	2.1	24	2.5	31	516	8.5	4.7	27	3.1	29	525	-4.7	-9.8	32	8.1																								
850	1	9	198	-12.0	-17.6	29	9.5	31	1,021	6.1	1.1	26	5.0	31	1,025	6.9	4.26	5.7	29	951	-5.2	-12.8	31	7.5																									
800	1	1,396	-11.9	-17.8	30	10.5	11	1,491	5.1	-2.4	27	7.4	31	1,494	5.8	-3.9	26	8.2	29	1,400	-5.8	-18.0	30	9.3	30	1,499	7.6	-3.5	25	1.9																			
750	1	1,811	-11.5	-18.8	30	11.1	31	1,985	3.6	-6.2	27	9.7	31	1,989	4.1	-7.7	27	10.1	29	1,874	-7.2	-20.1	29	10.7	31	1,999	6.2	-5.1	25	4.5																			
700	1	2,304	-12.8	-20.2	29	12.5	31	2,507	1.4	-9.4	27	11.6	31	2,513	2.2	-10.4	27	12.7	28	2,375	-11.1	-21.7	29	12.8	31	2,529	5.8	-9.1	27	6.1																			
650	1	2,879	-15.1	-23.1	28	13.2	31	3,131	-1.3	-13.1	27	13.5	31	3,167	-7.9	-12.5	27	14.4	29	3,077	-11.1	-22.9	28	13.5	31	3,191	3.2	-13.6	25	7.8																			
600	1	3,585	-18.2	-26.9	28	13.8	31	3,697	-9.4	-16.9	26	15.5	31	3,655	-3.8	-16.5	27	16.6	28	3,472	-14.7	-24.8	28	17.8	31	3,688	-4.8	-16.3	26	8.7																			
550	1	3,799	-21.8	-31.0	28	15.2	31	4,274	-7.7	-21.6	27	18.0	31	4,284	-7.2	-20.2	27	18.2	28	4,075	-17.3	-26.8	28	21.2	31	4,323	-4.5	-19.8	26	10.0																			
500	1	4,016	-25.2	-35.0	28	16.2	31	4,945	-12.0	-24.5	27	19.8	31	4,956	-11.5	-24.1	27	20.9	28	4,723	-21.0	-31.1	27	23.7	31	5,002	-9.1	-23.5	26	12.5																			
450	1	5,303	-39.7	-39.5	27	17.9	31	5,668	-17.0	-27.2	26	22.9	31	5,681	-16.2	-27.9	27	23.1	28	5,421	-25.1	-35.7	27	27.2	31	5,733	-14.1	-27.0	26	14.0																			
400	1	6,084	-34.2	-42.7	27	19.3	31	6,451	-22.0	-32.7	26	26.5	31	6,465	-21.6	-32.1	27	26.4	28	6,100	-30.1	-39.7	27	30.0	31	6,524	-19.8	-30.9	25	16.0																			
350	1	6,883	-39.7	-44.0	27	20.1	31	7,307	-28.8	-36.8	26	29.7	31	7,323	-27.8	-36.0	27	30.9	28	7,009	-35.4	-42.7	27	33.3	31	7,386	-26.5	-36.0	26	18.1																			
300	1	7,756	-45.8			26	23.8	31	8,253	-33.4	-43.4	26	33.1	31	8,272	-34.8	-43.0	27	34.5	28	7,929	-41.8	-44.9	27	37.6	31	8,340	-33.6	-40.3	26	20.7																		
250	3	8,767	-51.3			26	27.8	31	9,307	-42.8	-47.7	26	37.0	31	9,328	-42.5		27	39.2	28	8,955	-48.4		27	38.7	31	9,400	-41.7	-46.8	26	23.8																		
200	3	9,943	-54.3			26	30.8	31	10,516	-50.7		26	42.3	31	10,536	-51.2		27	44.7	28	10,140	-54.1		27	40.2	31	10,614	-49.7	-56.8	26	27.2																		
150	3	11,374	-53.9			27	29.0	31	11,953	-54.9		27	45.2	31	11,970	-54.9		27	49.6	28	11,465	-54.9		27	39.2	31	12,057	-54.0		26	30.0																		
100	2	12,240	-53.2			27	29.8	31	12,803	-56.7		26	45.5	31	12,821	-56.5		27	48.7	27	12,428	-54.4		27	38.9	31	12,909	-56.1		27	29.3																		
50	2	13,234	-53.5			27	29.9	31	13,777	-56.6		27	43.6	31	13,794	-59.5		27	43.1	27	13,412	-54.8		27	35.8	31	13,882	-59.5		27	28.8																		
10	2	14,193	-54.6			27	27.5	31	14,914	-62.0		27	36.6	30	14,924	-63.3		27	39.6	25	14,578	-56.5		27	32.6	1	15,011	-63.9		27	27.3																		
100	2	15,814	-56.9			27	27.2	31	16,278	-66.7		26	27.8	27	16,275	-66.6		27	31.3	25	15,987	-58.4		27	29.7	31	16,362	-68.5		27	21.7																		
70	2	17,220	-58.9			26	26.1	1	17,623	-67.7		27	22.2	27	17,622	-66.8		27	23.1	23	17,380	-60.4		27	26.7	20	17,693	-70.7		27	16.6																		
70	2	18,039	-59.5			26	26.8	29	18,430	-66.8		27	17.6	27	18,446	-66.4		27	18.5	22	18,212	-60.8		27	28.2	20	18,484	-69.3		27	28.3																		
60	2	19,005	-61.1			26	27.2	27	19,367	-65.5		26	15.5	27	19,367	-65.5		26	15.9	23	19,170	-61.0		27	26.5	25	19,441	-67.0		27	26.4																		
60	2	20,116	-62.4			26	27.8	27	20,480	-64.1		26	13.2	27	20,481	-63.6		27	14.4	22	20,304	-61.4		26	23.3	22	20,524	-64.4		27	5.9																		
40	2	21,508	-63.1			26	28.2	26	21,849	-62.7		26	12.7	27	21,860	-61.2		26	13.2	21	21,688	-61.3		26	24.8	20	21,997	-61.1		28	5.2																		
30	2	23,286	-63.0			26	30.9	21	23,645	-60.5		27	12.5	27	23,655	-59.2		26	17.6	21	23,480	-61.1		26	27.5	16	23,691	-59.3		27	7.8																		
25	16	24,425	-62.7			26	30.4	21	24,785	-59.2		26	15.4	27	24,801	-57.9		26	19.4	21	24,613	-60.8		26	29.7	14	24,847	-57.7		26	8.2																		
20	14	25,771	-62.9			26	33.9	19	26,203	-56.1		27	20.7	24	26,223	-54.5		26	20.3	18	26,012	-58.7		26	38.7	12	26,270	-55.4		27	9.9																		
10	10	27,588	-60.5			26	42.6	9	30,035	-43.5		28	23.0	18	28,121	-48.6		26	22.5	14	30,181	-55.8		26	32.7																								
7								5	33,127	-37.1										6	30,381	-49.0																											



# RAWINSONDE DATA

Average monthly values

JANUARY 1980

FLINT, MT 985 MB										GLASGOW, MT 935 MB										GRAND JUNCTION, CO 651 MB										GREAT FALLS, MT 887 MB										GREEN RAY, WI 595 MB																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
Standard pressure surface mb		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
No. of observations		Direction ten of deg.		Speed m.p.s.		Direction ten of deg.		Speed m.p.s.		No. of observations		Direction ten of deg.		Speed m.p.s.		Direction ten of deg.		Speed m.p.s.		No. of observations		Direction ten of deg.		Speed m.p.s.		Direction ten of deg.		Speed m.p.s.		No. of observations		Direction ten of deg.		Speed m.p.s.		Direction ten of deg.		Speed m.p.s.		No. of observations		Direction ten of deg.		Speed m.p.s.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
SFC	31	236	-5.7	-8.0	23	1.7	31	666	-14.7	-17.4	01	1.1	10	1,472	-1.1	-5.3	12	1.5	29	1,118	-9.2	-16.6	23	3.2	30	210	-6.9	-12.2	29	1.6	6	234	-11.3	-14.9	10	2.4	950	549	-7.2	-9.6	25	4.4	900	970	-8.4	-12.8	26	6.9	31	989	-11.5	-14.1	31	4.7	7	16	1,536	-2.3	-5.8	12	1.5	29	1,449	-7.5	-15.2	26	5.9	1,401	-10.1	-18.9	28	5.7	800	1,183	-9.4	-19.9	27	10.6	11	1,676	-10.5	-16.3	30	16.0	29	1,939	-9.4	-16.5	28	7.1	30	1,868	-10.9	-20.2	27	7.5	750	2,380	-11.0	-21.5	27	12.6	31	2,391	-12.5	-17.7	30	10.1	10	2,477	-1.7	-7.9	22	3.0	29	2,417	-11.1	-17.6	29	6.5	20	2,362	-12.4	-22.7	28	8.9	700	2,908	-13.3	-24.1	27	14.9	31	2,916	-14.8	-20.8	30	11.3	30	3,021	-5.6	-11.4	25	7.0	29	2,945	-13.3	-19.4	29	10.8	600	3,469	-15.8	-27.6	27	17.7	31	3,475	-17.2	-24.9	30	12.6	30	3,599	-8.9	-14.5	26	11.4	29	3,507	-15.5	-23.3	30	13.0	500	4,069	-18.8	-29.6	27	19.7	31	4,071	-20.4	-28.7	30	13.4	30	4,214	-12.7	-17.4	27	11.0	29	4,107	-19.0	-26.4	30	14.0	400	4,713	-22.6	-33.8	27	21.9	31	4,711	-24.3	-31.4	30	14.5	30	4,874	-16.3	-23.3	28	13.5	29	4,750	-22.9	-31.1	30	14.6	300	5,408	-27.0	-36.2	27	24.4	31	5,399	-28.9	-36.1	30	15.7	30	5,585	-21.0	-28.7	28	16.4	29	5,442	-27.3	-36.0	30	17.1	200	6,159	-32.0	-41.9	28	27.5	31	6,145	-34.3	-39.7	30	17.8	29	6,356	-26.0	-34.5	28	19.7	28	6,192	-32.6	-40.1	30	19.9	100	6,981	-37.8	-45.4	27	29.8	31	6,959	-40.2	-44.6	30	20.9	29	7,198	-32.2	-40.0	28	21.9	27	7,020	-38.4	-44.7	30	22.7	0	7,892	-44.0		27	32.2	31	7,860	-46.3		30	21.9	29	8,130	-39.5	-44.6	28	25.1	27	7,929	-44.6		30	25.6	29	8,494	-51.6		30	25.6	29	8,848	-51.6		27	24.6	200	9,084	-54.6		27	39.6	31	9,032	-56.6		30	27.1	29	9,223	-55.1		30	27.1	100	10,084	-54.6		27	35.6	31	11,032	-55.2		29	23.0	29	11,576	-55.9		30	25.2	29	11,442	-54.8		28	28.5	175	12,371	-53.7		27	35.0	31	12,304	-54.2		29	23.5	29	12,602	-55.9		29	22.6	27	12,178	-54.3		30	24.4	29	12,300	-53.7		28	27.8	150	13,361	-54.3		27	33.3	30	13,292	-53.8		29	24.3	29	13,584	-55.6		29	22.5	26	13,164	-54.0		30	25.7	29	13,289	-53.6		28	26.2	125	14,527	-55.8		27	31.7	30	14,463	-54.3		29	22.6	29	14,744	-56.8		29	20.0	25	14,530	-54.6		30	25.3	29	14,452	-56.2		28	23.9	100	15,940	-57.9		27	30.0	30	15,887	-56.5		29	24.5	29	16,147	-60.2		30	24.4	29	15,951	-56.5		28	26.3	80	17,348	-58.4		27	27.9	30	17,290	-57.8		29	24.3	27	17,536	-61.1		30	24.2	29	17,267	-59.5		28	22.7	70	18,181	-60.3		27	25.9	30	18,140	-58.1		29	24.5	26	18,354	-62.8		29	24.5	22	18,200	-58.7		30	24.6	29	18,100	-60.5		28	21.0	60	19,145	-61.1		27	24.7	30	19,109	-59.3		29	25.3	26	19,303	-62.7		29	22.4	21	19,180	-58.5		30	22.4	29	19,068	-61.2		28	21.5	40	20,271	-62.8		27	24.7	29	20,257	-60.6		30	23.7	26	20,429	-62.4		29	22.5	21	20,323	-59.6		30	21.8	20	20,210	-62.8		28	18.0	20	21,643	-63.5		27	26.1	28	21,656	-61.7		30	24.4	22	21,808	-62.6		31	21.7	17	21,590	-61.7		30	21.2	17	21,503	-62.4		31	20.1	23	21,582	-64.2		29	18.1	10	23,408	-61.7		27	22.7	16	23,458	-63.7		31	24.8	16	23,731	-62.0		31	21.4	21	24,452	-65.7		29	19.3	25	24,521	-63.6		27	24.5	21	24,568	-64.6		31	24.8	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4		30	17.6	20	25,822	-64.6		28	20.2	15	27,727	-59.8		27	31.5	15	25,921	-66.1		31	24.7	12	26,116	-62.4</

GREENSBORO, NC 986 MB										GUADALUPE IS., MEXICO 1014 MB										GUAM, MARIANA IS. 1000 MB										HILO, HI 1012 MB										HUNTINGTON, WV 989 MB									
SFC	31	275	1.4	-3.8	36	1.0	30	23	15.3	11.1	31	3.0	31	111	23.8	20.4	07	3.8	31	10	19.2	15.2	26	.9	31	246	-1.1	-5.1	24	.2																			
1000									142	14.6	10.6	31	5.5	14	119	23.5	20.6	07	3.5	31	15	21.3	16.7	29																									
950	31	573	2.7	-4.1	32	2.0	20	574	12.1	5.5	30	6.8	31	558	21.8	19.4	07	9.1	31	559	18.9	14.7	01	1.1	31	570	-1.6	-4.8	23	2.2																			
900	31	1,010	2.0	-5.5	30	3.7	10	1,026	10.1	1.0	30	6.5	31	1,022	16.1	11.1	36	1.1	31	1,002	-1.2	-8.0	25	5.5	750	1,471	1.8	-6.2	28	6.3																			
850	31	1,471	1.8	-6.2	28	6.3	30	1,500	8.5	-4.7	30	6.4	31	1,515	16.6	5.5	07	6.5	31	1,506	13.3	7.0	29	2.8	31	1,457	-1.6	-10.7	27	7.8																			
800	31	1,959	.6	-8.3	27	9.5	30	1,999	6.9	-9.3	30	6.3	31	2,031	15.8	2.07	47	4.7	31	2,016	12.5	-1.7	25	2.8	31	1,939	-3.8	-12.0	27	9.9																			
750	31	2,476	-1.1	-10.8	27	12.1	30	2,528	4.6	-12.8	29	7.2	31	2,577	13.8	-4.5	07	3.7	31	2,555	10.3	-6.4	24	6.0	31	2,449	-4.7	-13.0	28	12.6																			
700	31	3,024	-4.0	-12.5	27	15.1	30	3,086	1.1	-14.9	28	10.6	31	3,155	11.0	-7.8	07	3.0	31	3,126	7.4	-10.0	26	6.5	31	2,990	-6.9	-15.3	27	15.0																			
650	30	3,605	-7.0	-17.2	27	16.9	30	3,676	-2.1	-18.6	28	13.2	30	3,770	7.4	-10.6	07	1.6	31	3,732	3.8	-12.6	27	8.0	31	3,565	-9.7	-15.5	27	17.3																			
600	30	4,225	-10.4	-21.7	27	20.5	10	4,310	-5.7	-22.4	28	15.4	29	4,372	-11.9	-20.4	27	20.8	31	4,378	-16.3	-29.7	27	31	4,180	-12.9	-20.9	27	19.8																				
550	30	4,890	-14.6	-25.8	27	23.2	30	4,987	-10.1	-25.8	28	14.8	30	5,126	-4.0	-18.9	08	1.6	31	5,071	-3.6	-21.7	27	13.8	31	4,839	-16.8	-25.1	27	21.6																			
500	30	5,606	-19.1	-29.9	27	25.7	30	5,715	-15.0	-31.2	28	17.7	30	5,882	-4.8	-22.8	09	1.0	31	5,817	-8.6	-25.9	27	16.5	31	5,549	-21.3	-29.3	27	25.3																			
450	30	6,382	-24.4	-33.9	27	27.8	29	6,502	-20.8	-34.6	28	16.9	30	6,704	-9.4	-27.0	09	1.4	31	6,624	-14.6	-31.3	28	18.4	30	6,318	-26.3	-35.1	27	28.3																			
400	30	7,230	-30.3	-39.6	27	30.9	28	7,359	-27.6	-39.8	28	21.1	29	7,604	-15.1	-32.4	08	2.0	31	7,506	-20.5	-36.9	28	22.1	31	7,160	-32.4	-41.5	27	32.0																			
350	30	8,169	-37.5	-42.6	27	32.7	26	8,304	-35.0		28	23.2	30	8,608	-21.6	-39.3	26	26.9	31	8,091	-39.2	-44.7	27	29	7,811	-44.7	-49.1	27	34.5																				
300	30	9,212	-45.6		27	35.7	26	9,358	-43.1		27	27.0	29	9,718	-30.2	-44.8	30	2.0	31	9,580	-33.1	-46.7	28	29.2	31	9,127	-46.9		27	40.2																			
250	29	10,415	-53.6		27	38.5	26	10,566	-50.7		28	30.0	29	10,988	-40.5	-53.6	25	2.5	31	10,840	-41.6		28	31.0	30	11,316	-53.7		27	42.7																			
200	29	11,838	-56.5		27	42.4	26	12,007	-54.3		28	26.8	28	12,469	-52.8		22	4.0	31	12,320	-52.1		28	31.8	30	11,748	-55.8		27	41.1																			
175	29	12,687	-56.4		27	38.1	26	12,859	-56.8		29	27.9	28	13,318	-59.7		22	4.2	31	13,173	-57.6		28	30.6	30	12,601	-54.9		27	40.5																			
150	28	13,666	-57.8		27	35.5	26	13,829	-59.8		28	23.8	28	14,269	-55.6		26	4.1	31	14,134	-63.6		28	26.3	29	13,586	-55.5		27	38.5																			
125	28	14,808	-60.6		28	27.5	25	14,957	-64.6		27	21.1	28	15,340	-75.8		17	3.5	31	15,235	-70.3		27	20.8	28	14,746	-57.9		27	35.0																			
100	27	16,178	-63.6		28	22.0	22	16,295	-68.6		28	10.8	28	16,602	-83.7		13	7.5	30	16,540	-76.3		27	13.3	28	16,143	-60.7		27	30.6																			
80	26	17,545	-64.4		28	18.3	22	17,628	-69.7		28	5.0	23	17,838	-82.0		10	8.8	30	17,821	-77.1		25	5.1	25	17,531	-62.2		27	25.9																			
70	26	18,363	-63.4		28	14.6	21	18,429	-68.9		34	2.3	21	18,594	-77.0		10	8.2	29	18,593	-74.3		13	4.8	23	18,361	-62.1		27	22.0																			
60	26	19,308	-61.8		28	12.7	21	19,355	-67.3		04	3.6	18	19,497	-71.5		10	8.1	29	19,500	-70.4		12	4.2	21	19,322	-62.4		27	19.3																			
50	26	20,427	-63.2		27	12.0	20	20,462	-65.0		06	4.0	18	20,585	-67.6		10	12.0	27	20,596	-65.9		09	3.9	16	20,420	-62.1		27	18.1																			
40	26	21,627	-64.7		27	7.7	18	21,672	-62.7		05	4.6	18	21,797	-69.2		09	10.6	27	21,827	-62.7		07	3.8	16	21,625	-62.2		27	13.2																			
30	24	23,585	-61.1		28	15.8	17	23,601	-61.0		05	8.0	17	23,744	-57.9		09	10.0	25	23,756	-59.8		07	3.6	14	23,596	-61.2		27	12.8																			
25	23	24,724	-59.3		28	16.9	16	24,736	-59.8		01	24.5	15	24,900	-54.8		08	3.8	25	24,902	-58.0		09	3.5	10	24,713	-61.0																						
20	23	26,130	-57.3		28	18.8	11	26,170	-57.3					15	26,336	-51.7		34	1.4	26	26,315	-55.2		07	.8	26	26,088	-59.4																					
15	21	27,964	-53.0		27	27.2								14	28,216	-48.1		31	4.0	23	28,166	-51.5		31	3.5			-86.4																					
10	13	30,691	-44.0											8	30,693	-44.9					33,215	-83.5		26	7.3																								

## Average monthly values

JANUARY 1980



## Average monthly values

JANUARY 1960

PORTLAND, ME 1013 MB										QUILLABUTE, WA 1009 MB										RAPID CITY, SD 904 MB										ST CLOUD, MN 981 MB										ST PAUL ISLAND, AK 1011 MB									
SFC	31	20	-6.9	-12.5	29	2.2	30	58	.3	-1.8	09	.8	30	966	-8.7	-14.0	34	2.4	31	316	-14.1	-17.8	32	1.8	31	10	-4.2	-7.6	06	4.1																			
1000	27	146	-6.0	-11.6	31	2.7	23	178	2.3	-1.9	07	2.2											22	161	-3.8	-6.9	05	6.1																					
950	31	523	-6.9	-12.7	30	5.6	30	543	1.6	-3.7	13	2.2										2.6	31	501	-6.1	-10.9	07	4.8																					
900	31	945	-7.7	-14.8	30	6.0	30	977	-1.1	-6.4	20	1.9	24	1,030	-9.5	-14.8	34	2.6	31	556	-13.2	-15.7	32	2.6	31	923	-7.8	-14.6	08	3.5																			
850	31	1,389	-8.5	-17.4	30	7.7	30	1,432	-1.3	-11.3	27	1.4	27	1,448	-9.6	-13.6	31	2.6	31	1,461	-10.1	-18.1	30	4.9	31	1,368	-7.1	-16.9	08	2.9																			
800	31	1,859	-8.7	-21.7	30	8.5	30	1,910	-4.8	-14.0	26	4.0	30	1,921	-7.7	-14.1	31	9.0	31	1,872	-11.1	-21.9	30	8.5	31	1,033	-11.2	-19.9	06	1.9																			
750	31	2,358	-10.0	-24.3	29	10.4	30	2,416	-7.1	-19.8	27	5.8	30	2,422	-9.2	-15.7	31	10.5	31	2,367	-12.0	-23.9	30	9.6	31	2,327	-13.3	-23.6	08	1.2																			
700	31	2,887	-12.9	-25.0	28	12.6	30	2,950	-10.1	-23.5	28	7.7	30	2,953	-11.7	-18.5	30	11.7	31	2,892	-14.2	-24.6	30	11.0	31	2,849	-16.1	-27.2	05	4.2																			
650	31	3,449	-15.7	-27.9	28	15.1	30	3,519	-12.5	-24.4	28	9.5	30	3,519	-14.3	-22.4	30	12.6	31	3,452	-16.7	-26.8	29	12.0	31	3,404	-19.0	-31.4	31	9.9																			
600	31	4,009	-18.9	-30.6	28	17.7	29	4,122	-16.5	-26.9	28	11.8	30	4,122	-18.1	-25.7	29	14.3	31	4,050	-19.9	-29.4	29	13.4	31	3,997	-22.1	-34.0	31	1.3																			
550	31	4,692	-22.8	-34.3	27	20.1	29	4,771	-20.6	-29.9	26	14.0	30	4,767	-22.2	-29.7	29	17.2	31	4,680	-24.1	-32.5	29	15.1	31	4,632	-25.9	-37.1	29	7.7																			
500	31	5,385	-26.9	-39.3	27	24.2	29	5,470	-25.1	-34.6	28	17.1	30	5,461	-26.6	-34.1	29	19.5	31	5,379	-28.9	-37.7	29	16.3	31	5,316	-30.0	-41.3	24	1.5																			
450	31	6,138	-31.6	-41.1	27	27.1	29	6,228	-30.0	-38.1	28	16.9	30	6,213	-32.2	-38.7	29	21.1	31	6,125	-33.7	-40.9	29	18.2	31	6,059	-35.1	-42.9	24	2.0																			
400	31	6,962	-37.1	-43.0	27	29.4	29	7,058	-35.7	-42.1	28	21.7	30	7,034	-38.1	-44.1	29	23.6	31	6,941	-39.7	-44.3	28	20.8	31	6,871	-40.8	-45.8	21	3.3																			
350	31	7,876	-43.7	-47.5	27	31.9	29	7,976	-42.2	-43.8	28	24.4	30	7,944	-44.4	-49.1	29	26.2	31	7,844	-46.1		28	23.5	30	7,785	-46.6		25	2.7																			
300	31	8,896	-49.8		27	32.6	28	8,998	-49.2		28	25.7	30	8,958	-51.4		29	28.8	31	8,851	-52.5		28	24.7	30	8,792	-52.1		25	3.7																			
250	31	10,076	-54.4		27	31.1	28	10,177	-55.5		29	27.1	30	10,128	-56.1		29	27.7	31	10,019	-55.9		28	26.1	30	9,961	-56.8		26	4.7																			
200	31	11,503	-54.2		27	32.6	28	11,591	-57.4		29	27.8	30	11,544	-55.5		29	28.8	31	11,442	-55.5		28	28.4	30	11,380	-54.9		25	8.2																			
175	31	12,361	-53.8		27	31.7	28	12,439	-55.2		29	26.1	30	12,398	-54.3		28	28.5	31	12,299	-54.0		27	28.0	30	12,239	-52.5		25	9.0																			
150	31	13,352	-54.1		27	28.6	26	13,424	-54.6		29	25.7	29	13,384	-54.2		28	26.7	31	13,288	-54.0		28	29.4	30	13,239	-51.2		25	10.4																			
125	31	14,517	-55.9		27	28.0	26	14,589	-55.3		29	23.5	29	14,552	-55.0		28	25.6	31	14,457	-55.2		27	27.8	30	14,426	-50.6		24	11.9																			
100	31	15,931	-57.4		27	24.7	26	16,004	-57.4		29	23.9	29	15,972	-57.2		28	25.0	30	15,876	-57.1		28	26.7	30	15,884	-50.2		25	12.5																			
80	31	17,335	-59.9		27	24.7	25	17,430	-57.1		29	22.4	28	17,371	-58.9		28	25.4	30	17,282	-58.9		28	27.1	30	17,346	-50.2		24	13.5																			
70	31	18,170	-60.1		27	23.7	25	18,273	-58.2		29	22.8	26	18,205	-60.0		28	24.5	29	18,111	-59.7		28	25.5	30	18,215	-49.7		25	14.5																			
60	31	19,131	-60.1		27	23.4	25	19,244	-57.4		30	22.4	25	19,175	-60.8		28	22.4	27	19,089	-60.6		28	25.1	30	19,224	-49.5		25	15.0																			
50	31	20,261	-61.4		27	21.9	24	20,395	-58.5		29	21.9	24	20,306	-61.7		28	20.4	26	20,226	-62.0		28	24.7	30	20,418	-49.6		26	16.1																			
40	31	21,632	-61.9		26	22.9	23	21,787	-59.9		30	21.2	21	21,691	-63.0		29	20.1	26	21,602	-63.4		28	23.6	28	21,889	-49.9		26	17.8																			
30	31	23,040	-61.2		26	25.6	22	23,218	-61.7		30	20.9	19	23,462	-63.6		29	18.7	23	23,167	-64.8		28	23.5	27	23,754	-50.1		27	18.4																			
25	28	24,532	-61.9		26	25.4	21	24,006	-62.1		31	21.5	15	24,635	-66.1		30	16.7	16	24,511	-64.2		28	23.9	49	24,002	-50.2		27	21.0																			
20	27	25,926	-61.0		26	29.6	16	26,066	-63.5		31	23.9	13	26,004	-66.5		29	17.5	13	25,892	-64.6		28	25.4	24	26,455	-50.4		27	21.4																			
15	24	27,723	-58.7		27	29.7	12	27,875	-63.0		32	28.6	7	27,835	-64.4		9	27,887	-65.3		9	27,817	-65.3		21	28.5	51	-50.6		29	24.1																		
10	16	30,340	-51.3		26	5	30,488	-60.2									6	30,137	-62.2					12	31,059	-52.1																							

# RAWINSONDE DATA

Average monthly values

JANUARY 1980

SALEM, OR 1010 MB										SALT LAKE CITY, UT 870 MB										SAN DIEGO, CA 1001 MB										SAN JUAN, P. R. 1010 MB													
Resultant Wind										Resultant Wind										Resultant Wind										Resultant Wind													
No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.h.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.h.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.h.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.h.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.h.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.h.								
SFC	1	17.4	-2.4	-5.5	34	1.0	31	61	-5	-2.0	23	.7	31	1,286	-7.7	-3.7	17	1.9	29	124	12.0	8.0	15	1.1	31	6	21.0	18.9	09	1.6	1.0	13	215	-5.5	-9.3	01	3.0	25	173	1.7	-2.8	36	.9
1000	13	568	-2.2	-6.4	26	2.2	31	573	1.7	-2.8	36	.9	30	1,482	-10.0	-5.0	14	1.6	29	150	12.8	6.4	14	.5	31	144	22.3	18.6	09	3.2	900	31	523	-9.4	-12.2	27	1.6	31	550	1.0	-1.3	22	.5
850	31	1,381	-11.5	-17.2	27	6.2	31	1,446	-6.9	-11.8	21	1.8	31	1,725	10.9	-5.0	27	5.4	31	567	12.7	4.4	20	2.4	31	589	19.4	16.2	10	5.7	850	31	998	-1.7	-10.7	27	4.7	31	990	1.8	-5.8	23	5.0
800	31	1,451	-2.1	-12.8	28	7.3	31	1,444	-1.2	-9.6	24	3.0	30	1,982	-12.0	-7.5	21	3.2	29	1,493	7.4	-1.4	27	4.3	31	1,053	16.2	13.0	10	5.8	750	31	2,442	-8.8	-16.0	26	11.9	31	2,446	-3.7	-17.2	27	9.9
750	31	2,442	-8.8	-16.0	26	11.9	31	2,446	-3.7	-17.2	27	9.9	31	2,471	-3.8	-9.5	26	4.1	29	2,515	2.7	-9.8	28	6.5	31	2,585	10.8	-7.1	08	3.1	700	31	2,988	-7.1	-18.1	27	14.6	31	2,988	-6.7	-19.8	27	9.3
700	31	3,559	-9.5	-21.6	27	17.0	31	3,564	-10.0	-22.7	28	11.9	31	3,590	-9.9	-14.4	28	11.4	29	3,660	-3.4	-18.2	28	8.8	31	3,764	-8.8	-14.4	06	1.1	650	31	4,172	-13.2	-24.2	27	19.1	31	4,177	-13.4	-25.0	29	16.6
650	31	4,830	-17.1	-28.1	27	21.9	31	4,834	-17.4	-27.0	29	15.9	31	4,862	-17.1	-23.7	28	15.1	29	4,962	-11.1	-24.8	28	12.0	31	5,110	-1.8	-22.1	32	2.9	600	31	5,539	-21.7	-32.7	27	25.5	31	5,542	-22.1	-33.1	29	18.8
600	31	5,637	-27.2	-37.8	27	28.4	31	5,638	-27.7	-36.8	29	21.5	31	5,640	-26.9	-34.9	28	20.7	28	5,671	-16.0	-29.4	29	12.8	31	5,860	-6.9	-26.4	31	4.5	550	31	7,145	-13.3	-41.3	27	34.9	31	7,145	-13.3	-41.3	27	34.9
550	31	8,073	-40.0	-45.5	27	34.9	31	8,071	-40.0	-45.8	30	27.2	31	8,107	-40.0	-45.4	28	25.8	28	8,276	-35.0	-46.2	29	18.9	31	8,546	-25.8	-41.0	31	13.2	500	31	9,106	-47.2	-52.7	26	37.2	31	9,106	-47.2	-52.7	26	37.2
500	31	10,295	-53.2	-58.7	26	41.1	31	10,293	-55.1	-60.1	29	32.5	30	10,316	-55.0	-60.0	29	31.0	28	10,355	-51.7	-62.8	29	22.5	30	10,600	-42.6	-48.1	30	25.7	450	31	11,721	-55.0	-60.7	27	37.2	31	11,721	-55.0	-60.7	27	37.2
450	31	12,573	-55.0	-60.7	27	36.7	30	12,544	-55.4	-60.7	29	26.9	30	12,576	-54.8	-60.7	29	26.4	28	12,816	-55.6	-60.7	28	27.4	30	13,214	-60.1	-65.6	30	27.4	400	31	13,557	-55.0	-60.7	27	36.2	30	13,557	-55.0	-60.7	27	36.2
400	31	14,171	-57.5	-62.9	27	32.2	30	14,169	-56.0	-62.9	29	23.3	30	14,171	-57.2	-62.9	29	23.3	28	14,266	-60.6	-62.9	28	25.4	30	14,613	-65.6	-71.1	30	23.7	350	31	16,118	-59.8	-65.0	27	25.2	30	16,118	-59.8	-65.0	27	25.2
350	31	17,502	-61.7	-67.1	27	21.4	30	17,518	-57.4	-67.1	29	17.3	29	17,516	-60.4	-67.1	29	17.3	27	17,677	-66.2	-67.1	28	13.1	30	17,816	-79.3	-84.8	33	3.6	300	31	18,331	-62.2	-67.1	27	19.2	30	18,331	-62.2	-67.1	27	19.2
300	31	19,284	-62.3	-67.1	27	18.1	30	19,325	-59.1	-67.1	30	16.3	28	19,311	-60.6	-67.1	30	15.6	26	19,432	-64.2	-67.1	27	7.6	30	19,483	-70.2	-75.7	08	2.7	250	31	20,408	-62.9	-67.1	27	13.8	30	20,408	-62.9	-67.1	27	13.8
250	31	21,742	-61.1	-67.1	27	16.8	30	21,855	-60.2	-67.1	32	16.2	27	21,835	-60.7	-67.1	32	16.2	25	22,456	-68.6	-67.1	28	8.6	29	22,585	-64.0	-69.5	08	6.0	200	31	23,543	-62.4	-67.1	27	13.8	30	23,543	-62.4	-67.1	27	13.8
200	31	24,674	-62.2	-67.1	27	14.9	30	24,801	-61.3	-67.1	33	15.6	20	24,777	-62.0	-67.1	33	15.6	21	24,847	-61.0	-67.1	32	5.5	29	24,963	-53.4	-58.9	10	10.0	150	31	26,075	-60.7	-67.1	27	14.9	30	26,075	-60.7	-67.1	27	14.9
150	31	27,860	-57.5	-67.1	27	10.9	30	28,021	-62.4	-67.1	34	18.6	15	27,982	-63.9	-67.1	34	18.2	13	28,063	-57.5	-67.1	32	9.5	24	28,297	-46.8	-52.3	18	2.3	100	31	30,423	-51.9	-57.5	26	11.6	30	30,423	-51.9	-57.5	26	11.6

SAULT STE MARIE, MI 988 MB										SPOKANE, WA 931 MB										TAMPA BAY, FL 1017 MB										TOPEKA, KS 988 MB										TRUK, CAROLINE IS. 1010 MB									
Resultant Wind										Resultant Wind										Resultant Wind										Resultant Wind										Resultant Wind									
No. of observations										No. of observations										No. of observations										No. of observations										No. of observations									
Dynamic height meters										Dynamic height meters										Dynamic height meters										Dynamic height meters										Dynamic height meters									
Temperature °C										Temperature °C										Temperature °C										Temperature °C										Temperature °C									
Dew Point °C										Dew Point °C										Dew Point °C										Dew Point °C										Dew Point °C									
Direction tens of deg										Direction tens of deg										Direction tens of deg										Direction tens of deg										Direction tens of deg									
Speed m.p.h.										Speed m.p.h.										Speed m.p.h.										Speed m.p.h.										Speed m.p.h.									
SFC	31	271	-9.5	-12.9	24	.3	31	720	-7.3	-11.6	11	.6	31	13	12.0	10.5	07	1.0	31	268	-4.4	-8.0	33	.9	31	2	27.7	24.1	06	4.2																			
1000	31	523	-9.4	-12.2	27	1.6	31	999	-6.1	-9.3	11	1.7	31	157	14.6	10.8	11	1.6	31	473	-3.1	-7.2	32	1.5	31	58	26.9	23.5	05	5.6																			
950	31	991	-10.1	-15.2	26	4.6	31	999	-6.1	-9.3	11	1.7	31	1,046	12.4	2.2	24	3.5	31	1,001	-3.2	-9.1	29	3.4	31	1,018	20.7	18.0	07	8.4																			
900	31	1,381	-11.5	-17.2	27	6.2	31	1,446	-6.9	-11.8	21	1.8	31	1,515	10.0	-2.0	27	5.4	31	1,453	-3.0	-12.7	28	6.3	31	1,511	18.2	14.1	08	7.7																			
850	31	1,884	-13.0	-20.0	28	7.3	31	1,919	-7.8	-14.4	24	4.2	31	2,029	9.8	-5.0	27	7.6	31	1,934	-3.3	-12.2	28	6.7	31	2,031	16.3	9.2	08	6.6																			
800	31	2,335	-14.9	-22.7	27	8.8	31	2,419	-9.0	-16.8	26	6.1	31	2,561	6.6	-7.6	27	9.2	31	2,443	-4.8	-15.2	28	11.4	31	2,579	13.9	4.5	08	6.4																			
750	31	2,855	-16.6	-24.6	28	10.6	31	2,858	-11.7	-21.7	28	6.8	31	3,125	4.2	-12.0	27	11.3	31	2,984	-6.8	-16.3	28	13.8	31	3,158	11.0	-1.8	08	5.8																			
700	31	3,409	-19.3	-26.7	28	11.7	31	3,523	-14.9	-24.7	28	8.6	31	3,725	4.4	-14.4	26	13.7	31	3,580	-6.1	-18.9	27	16.5	31	3,773	-3.1	0.9	6.0																				
650	31	4,001	-22.1	-30.2	28	12.3	30	4,124	-18.5	-28.4	28	11.4	31	4,365	-2.4	-19.3	26	15.3	31	4,175	-12.8	-23.9	28	19.0	31	4,429	4.1	-6.5	09	6.8																			
600	31	4,636	-25.9	-33.6	28	13.6	30	4,769	-22.1	-31.4	28	13.9	31	5,050	-7.0	-21.7	26	17.3	31	4,833	-17.0	-27.9	28	21.0	31	5,133	4.4	-10.0	08	7.5																			
550	31	5,321	-30.2	-38.1	28	15.8	30	5,463	-26.9	-34.7	29	15.9	31	5,787	-11.8	-27.0	26	19.7	31	5,542	-21.9	-32.5	28	23.6	31	5,892	-4.0	-15.1	09	7.7																			
500	31	6,063	-35.1	-40.8	28	17.8	30	6,215	-32.8	-38.0	29	18.3	31	6,585	-17.4	-30.4	26	21.5	31	6,109	-27.0	-38.3	27	27.5	31	6,716	-6.7	-20.7	08	8.1																			
450	31	6,875	-40.8	-44.6	28	21.8	30	7,037	-37.8	-43.3	29	20.4	31	7,457	-23.8	-36.3	26	24.9	31	7,148	-33.2	-42.7	28	32.3	31	7,621	-21.1	-25.6	08	7.9																			
400	31	7,777	-46.4	-50.4	28	23.7	27	7,956	-43.6	-48.4	29	24.6	31	8,221	-30.9	-41.5	26	27.6	30	8,075	-40.4	-48.5	27	35.4	31	8,425	-20.4	-33.1	08	8.1																			
350	31	8,785	-52.0	-56.0	28	25.3	26	8,968	-50.4	-56.0	29	27.6	31	9,494	-39.0	-47.9	26	30.0	30	9,105	-48.2	-55.2	27	37.3	31	9,745	-20.8	-41.8	08	5.0																			
300	31	9,956	-54.9	-58.9	27	27.2	26	10,184	-55.7	-60.7	29	29.4	31	10,721	-47.5	-52.3	27	36.9	30	10,287	-56.9	-62.7	27	39.5	31	11,023	-39.0	-50.3	11	5.4																			
250	29	11,384	-54.9	-58.9	27	28.0	26	11,560	-56.4	-61.4	29	28.2	31	12,169	-55.2	-60.0	27	38.8	30	11,704	-56.9	-62.7	27	39.5	30	12,511	-51.9	-57.3	13	5.7																			
200	28	12,242	-53.6	-58.6	27	28.0	26	12,416	-54.9	-59.9	29	27.2	31	13,016	-57.7	-62.5	27	34.8	30	12,552	-55.2	-60.0	27	39.4	30	13,362	-59.0	-62.8	12	5.8																			
175	29	13,233	-53.7	-58.7	27	28.0	26	13,408	-54.0	-59.0	29	28.0	31	13,916	-61.1	-65.9	27	34.8	30	13,537	-57.7	-62.5	27	39.4	30	14,311	-61.1	-65.5	10	5.9																			
150	28	14,401	-54.9	-58.9	27	28.0	24	14,579	-54.6	-59.6	29	24.9	31	15,091	-66.6	-71.4	27	25.9	30	14,673	-57.5	-62.3	27	32	32	15,459	-75.6	-70.0	7	7.8																			
125	27	15,823	-57.3	-62.3	27	27.2	24	16,001	-56.6	-61.6	30	23.9	30	16,422	-71.4	-76.2	28	20.4	29	16,094	-59.8	-64.6	27	26.2	29	16,651	-84.1	-79.7	09	14.2																			
100	27	17,229	-58.9	-63.9	27	28.1	24	17,411	-58.1	-63.1	30	22.8	30	17,733	-73.9	-78.7	28	14.8	29	17,483	-61.5	-66.3	27	21.6	29	17,888	-77.7	-72.9	09	12.8																			
75	26	18,063	-59.8	-64.8	27	27.7	24	18,249	-59.3	-64.3	30	22.9	30	18,522	-70.0	-74.8	28	9.0	28	18,302	-62.2	-67.0	28	20.6	29	18,659	-73.6	-68.8	08	8.4																			
60	26	19,024	-61.3	-66.3	27	27.1	24	19,215	-59.4	-64.4	30	22.7	30	19,443	-67.6	-72.4	28	5.6	27	19,249	-62.3	-67.1	28	20.8	28	19,564	-70.6	-65.8	09	17.0																			
50	26	20,122	-62.3	-67.3	27	26.2	24	20,355	-59.8	-64.8	30	22.6	30	20,588	-74.1	-78.9	28	6.0	27	20,394	-64.4	-69.2	28	20.6	29	20,709	-73.6	-68.8	08	8.4																			
40	22	21,477	-63.9	-68.9	27	29.5	21	21,736	-60.9	-65.9	30	24.5	30	21,971	-61.9	-66.7	25	7.4	20	21,751	-63.5	-68.3	28	13.4	28	22,038	-58.5	-53.7	09	23.4																			
30	17	23,259	-64.9	-69.9	27	30.7	16	23,527	-62.1	-67.1	31	21.9	36	23,720	-58.0	-62.8	26	10.3	17	23,543	-62.7	-67.5	29	13.2	27	23,877	-52.7	-47.9	09	6.5																			
25	12	24,359	-65.5	-70.5	27	30.7	16	24,627	-62.0	-67.0	32	23.9	29	24,868	-56.9	-61.7	27	11.1	13	24,678	-63.0	-67.8	30	12.0	26	25,064	-50.0	-45.2	09	26.8																			
20	12	25,161	-62.5	-67.5	27	31.6	16	25,430	-62.5	-67.5	32	26.0	29	25,680	-58.9	-63.7	27	12.4	11	26,071	-63.6	-68.4	29	12.0	26	26,263	-50.0	-45.2	09	26.8																			
15	12	25,963	-63.5	-68.5	27	31.6	16	26,232	-63.5	-68.5	32	26.0	29	26,480	-60.9	-65.7	27	18.7	6	27,889	-59.7	-64.5	26	22.7	26	28,081	-47.0	-42.2	09	26.8																			
10	12	26,765	-64.5	-69.5	27	31.6	16	27,034	-64.5	-69.5	32	26.0	29	27,280	-62.9	-67.7	27	22.7	7	28,081	-60.9	-65.7	26	22.7	26	28,273	-47.0	-42.2	09	26.8																			
5	12	27,567	-65.5	-70.5	27	31.6	16	27,836	-65.5	-70.5	32	26.0	29	28,081	-64.5	-69.5	27	22.7	7	28,833	-61.9	-66.7	26	22.7	26	29,025	-47.0	-42.2	09	26.8																			
0	12	28,369	-66.5	-71.5	27	31.6	16	28,607	-66.5	-71.5	32	26.0	29	28,833	-66.5	-71.5	27	22.7	7	29,635	-62.9	-67.7	26	22.7	26	30,217	-47.0	-42.2	09	26.8																			
5	12	29,171	-67.5	-72.5	27	31.6	16	29,349	-67.5	-72.5	32	26.0	29	29,599	-68.5	-73.3	27	22.7	7	30,447	-63.9	-68.7	26	22.7	26	31,029	-47.0	-42.2	09	26.8																			
10	12	29,973	-68.5	-73.5	27	31.6	16	30,121	-68.5	-73.5	32	26.0	29	30,371	-69.5	-74.3	27	22.7	7	31,655	-64.9	-69.7	26	22.7	26	32,011	-47.0	-42.2	09	26.8																			
15	12	30,775	-69.5	-74.5	27	31.6	16	30,893	-69.5	-74.5	32	26.0	29	31,121	-70.5	-75.3	27	22.7	7	32,869	-65.9	-70.7	26	22.7	26	33,001	-47.0	-42.2	09	26.8																			
20	12	31,577	-70.5	-75.5	27	31.6	16	31,615	-70.5	-75.5	32	26.0	29	31,871	-71.5	-76.3	27	22.7	7	33,727	-66.9	-71.7	26	22.7	26	34,033	-47.0	-42.2	09	26.8																			
25	12	32,379	-71.5	-76.5	27	31.6	16	32,417	-71.5	-76.5	32	26.0	29	32,673	-72.5	-77.3	27	22.7	7	34,839	-67.9	-72.7	26	22.7	26	35,045	-47.0	-42.2	09	26.8																			
30	12	33,181	-72.5	-77.5	27	31.6	16	33,159	-72.5	-77.5	32	26.0	29	33,415	-73.5	-78.3	27	22.7	7	35,861	-68.9	-73.7	26	22.7	26	36,057	-47.0	-42.2	09	26.8																			
35	12	33,983	-73.5	-78.5	27	31.6	16	33,937	-73.5	-78.5	32	26.0	29	34,171	-74.5	-79.3	27	22.7	7	36,673	-69.9	-74.7	26	22.7	26	37,063	-47.0	-42.2	09	26.8																			
40	12	34,785	-74.5	-79.5	27	31.6	16	34,739	-74.5	-79.5	32	26.0	29	34,935	-75.5	-80.3	27	22.7	7	37,485	-70.9	-75.7	26	22.7	26	38,055	-47.0	-42.2	09	26.8																			
45	12	35,587	-75.5	-80.5	27	31.6	16	35,541	-75.5	-80.5	32	26.0	29	35,791	-76.5	-81.3	27	22.7	7	38,291	-71.9	-76.7	26	22.7	26	39,057	-47.0	-42.2	09	26.8																			
50	12	36,389	-76.5	-81.5	27	31.6	16	36,343	-76.5	-81.5	32	26.0	29	36,547	-77.5	-82.3	27	22.7	7	39,093	-72.9	-77.7	26	22.7	26	40,023	-47.0	-42.2	09	26.8																			
55	12	37,191	-77.5	-82.5	27	31.6	16	37,145	-77.5	-82.5	32	26.0	29	37,301	-78.5	-83.3	27	22.7	7	40,039	-73.9	-78.7	26	22.7	26	41,035	-47.0	-42.2	09	26.8																			
60	12	37,993	-78.5	-83.5	27	31.6	16	37,947	-																																								



# RAWINSONDE DATA

Average monthly values

JANUARY 1962

WASHINGTON DULLES INT. AP 1009 MB										WAYCROSS, GA 1013 MB										WEST PALM BEACH, FL 1016 MB										WINNEMCCA, NV 868 MB										WINSLOW, AZ 851 MB									
Standard pressure surface mb	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind																				
					Direction tens of deg	Speed m p s					Direction tens of deg	Speed m p s					Direction tens of deg	Speed m p s					Direction tens of deg	Speed m p s																									
5FC	31	8.6	-1.7	-5.6	32	1.4	31	4.4	7.7	5.1	31	2.3	31	7	14.0	12.6	37	7	31	1,112	-2.0	-6.0	20	1.4	31	1,487	4.2	-1.7	19	1.2																			
1000	28	16.8	-1.8	-6.3	32	1.8	30	15.7	9.4	6.0	30	1.7	31	15.7	17.5	13.3	106	1.1	31	15.7	17.5	13.3	106	1.1	31	15.7	17.5	13.3	106	1.1																			
950	31	56.1	-1.8	-8.3	31	3.7	31	58.0	10.3	6.2	26	3.4	31	58.5	15.4	9.7	20	1.1	31	58.5	15.4	9.7	20	1.1	31	58.5	15.4	9.7	20	1.1																			
900	31	99.3	-2.6	-10.1	29	4.4	31	1,029	8.4	1.7	26	5.2	31	1,052	12.8	7.0	23	2.7	31	1,052	12.8	7.0	23	2.7	31	1,052	12.8	7.0	23	2.7																			
850	31	1,446	-3.0	-12.0	24	7.7	31	1,507	7.6	-3.6	26	6.9	31	1,531	11.4	4.9	25	4.4	30	1,484	-4.6	-4.6	21	1.4	19	1,529	4.2	-1.8	24	4.8																			
800	31	1,926	-3.7	-13.7	28	10.4	31	1,999	5.6	-4.9	26	8.5	31	2,037	10.1	-4.0	26	6.0	31	1,963	-4.6	-7.9	25	4.6	31	1,986	1.3	-3.9	24	4.5																			
750	31	2,435	-5.3	-15.4	28	13.0	31	2,526	3.7	-8.9	26	10.5	31	2,581	7.9	-8.1	26	8.6	31	2,477	-2.6	-10.5	26	6.4	31	2,505	-3.3	-7.7	26	8.4																			
700	31	2,924	-7.6	-16.0	28	15.3	31	3,003	-12.7	-12.7	27	12.3	31	3,138	5.4	-11.6	26	10.8	31	3,022	-5.2	-13.6	27	8.9	31	3,058	-2.2	-11.5	27	7.7																			
650	31	3,549	-10.0	-19.3	28	16.9	31	3,676	-2.1	-16.2	27	14.6	31	3,741	2.4	-14.0	26	12.6	31	3,601	-8.3	-17.2	28	10.8	31	3,641	-5.1	-15.6	27	9.1																			
600	31	4,162	-13.4	-23.3	27	19.0	31	4,308	-5.4	-19.1	27	17.4	31	4,383	-1.4	-17.4	26	14.1	31	4,218	-11.9	-21.0	29	13.2	31	4,266	-8.4	-21.2	27	10.3																			
550	31	4,819	-17.6	-26.7	27	21.7	31	4,985	-8.9	-22.7	26	20.2	31	5,071	-5.9	-21.5	26	15.9	31	4,879	-16.0	-26.0	29	14.8	31	4,936	-12.8	-25.3	27	12.2																			
500	31	5,527	-22.1	-30.7	27	25.1	31	5,714	-14.5	-26.8	26	24.5	31	5,810	-10.4	-27.2	27	17.9	31	5,591	-20.8	-30.1	28	16.3	31	5,656	-18.0	-30.6	28	14.0																			
450	31	6,294	-27.0	-34.8	27	29.4	30	6,506	-19.7	-31.0	26	27.6	31	6,612	-16.0	-31.2	28	20.7	30	6,368	-26.0	-35.5	29	18.3	30	6,433	-23.6	-34.0	28	15.9																			
400	31	7,114	-32.6	-41.0	27	33.4	30	7,369	-26.2	-36.4	26	31.6	31	7,489	-22.5	-35.1	26	23.3	30	7,210	-32.2	-42.0	28	20.4	30	7,283	-30.0	-40.0	28	17.2																			
350	31	8,064	-39.5	-45.8	27	36.5	30	8,323	-33.3	-42.8	26	34.5	31	8,457	-29.8	-40.6	27	26.4	30	8,141	-39.2	-45.4	29	24.1	30	8,222	-37.1	-44.1	28	19.3																			
300	31	9,098	-47.5	-53.7	27	39.3	30	9,385	-41.4	-48.0	26	38.1	31	9,535	-37.8	-47.1	27	29.8	30	9,178	-46.9	-53.7	29	29.6	30	9,268	-44.7	-52.7	29	22.7																			
250	31	10,283	-54.3	-61.3	27	41.4	30	10,599	-49.9	-56.9	26	43.7	31	10,769	-46.2	-54.1	27	35.4	30	10,364	-54.4	-61.3	29	32.4	30	10,467	-52.4	-59.4	29	26.1																			
200	31	11,704	-55.6	-62.1	27	42.1	30	12,038	-55.2	-62.1	26	47.5	31	12,226	-54.1	-60.3	27	40.3	30	11,771	-58.8	-65.7	29	29.9	29	11,887	-56.6	-63.6	29	23.9																			
175	31	12,556	-56.2	-62.1	27	38.8	30	12,869	-57.1	-62.1	27	46.3	30	13,073	-57.6	-62.1	27	37.6	27	12,614	-56.1	-62.1	29	29.4	27	12,738	-55.6	-62.1	28	28.8																			
150	31	13,539	-55.9	-62.1	27	37.6	29	13,859	-59.8	-62.1	27	42.7	30	14,038	-61.4	-62.1	26	34.9	27	13,596	-55.5	-62.1	29	26.5	27	13,723	-56.0	-62.1	28	26.9																			
125	31	14,694	-58.3	-62.1	27	34.8	28	14,988	-64.2	-62.1	27	37.4	29	15,156	-66.4	-62.1	27	29.3	27	14,755	-56.9	-62.1	29	23.0	27	14,880	-59.3	-62.1	28	24.6																			
100	31	16,091	-60.5	-62.1	27	29.4	27	16,341	-68.9	-62.1	27	28.7	29	16,488	-71.8	-62.1	27	23.8	26	16,156	-58.7	-62.1	29	19.5	22	16,268	-63.5	-62.1	29	20.2																			
75	31	17,475	-62.5	-62.1	27	24.2	26	17,671	-69.8	-62.1	27	22.5	29	17,799	-72.5	-62.1	27	16.2	26	17,553	-60.3	-62.1	30	16.2	17	17,638	-64.3	-62.1	29	13.9																			
50	31	18,285	-62.2	-62.1	27	21.2	25	18,488	-70.7	-62.1	27	16.7	29	18,688	-73.7	-62.1	27	11.9	26	18,390	-60.3	-62.1	30	14.6	18	18,455	-64.4	-62.1	29	11.9																			
25	31	19,246	-62.6	-62.1	27	21.8	24	19,408	-67.1	-62.1	27	13.2	29	19,512	-66.9	-62.1	27	8.4	25	19,353	-60.3	-62.1	31	12.6	16	19,398	-63.5	-62.1	30	9.9																			
50	27	20,363	-62.8	-62.1	27	19.7	24	20,513	-64.5	-62.1	26	11.3	29	20,623	-63.6	-62.1	27	8.7	24	20,495	-60.6	-62.1	31	10.4	14	20,510	-62.1	-62.1	32	7.8																			
40	26	21,741	-62.8	-62.1	27	19.0	22	21,879	-62.4	-62.1	26	13.5	28	22,005	-60.1	-62.1	26	8.5	24	21,880	-61.5	-62.1	32	11.0	13	21,892	-61.9	-62.1	33	7.8																			
30	24	23,525	-61.3	-62.1	26	20.8	22	23,665	-59.8	-62.1	26	15.9	28	23,817	-56.4	-62.1	27	10.1	23	23,659	-61.7	-62.1	33	10.4	10	23,672	-62.4	-62.1	34	7.8																			
20	24	24,658	-61.7	-62.1	26	20.2	21	24,810	-58.2	-62.1	26	15.2	28	24,962	-58.2	-62.1	27	11.1	22	24,800	-62.3	-62.1	34	11.3	9	24,813	-62.2	-62.1	35	7.8																			
10	24	26,069	-57.7	-62.1	26	21.8	20	26,222	-55.9	-62.1	26	16.5	25	26,405	-52.7	-62.1	27	11.1	18	26,165	-63.2	-62.1	32	13.2	5	26,189	-60.7	-62.1	36	7.8																			
5	14	27,891	-55.3	-62.1	26	30.6	19	28,082	-50.1	-62.1	26	23.3	23	28,292	-46.7	-62.1	28	15.1	12	27,939	-62.5	-62.1	31	18.0																									
10	8	30,556	-47.4	-62.1	26	24.4	13	30,758	-42.2	-62.1	26	23.9	20	31,043	-40.1	-62.1	28	22.4																															

# SOLAR RADIATION INTENSITIES

Tabulated in langleys per minute on a surface normal to the direction of the sun.

JANUARY 1980

PALMER, ALASKA										TUCSON, AZ									
Sun's zenith distance										Sun's zenith distance									
A.M.					P.M.					A.M.					P.M.				
78.7°	75.7°	70.7°	60.0°	*	60.0°	70.7°	75.7°	78.7°		78.7°	75.7°	70.7°	60.0°	*	60.0°	70.7°	75.7°	78.7°	
Air mass										Air mass									
1.94	1.81	1.65	1.45	*	1.45	1.65	1.81	1.94		4.64	3.71	2.78	1.86	*	1.86	2.78	3.71	4.64	
1	1.29	1.36	1.45	1.55	1.65	1.53	1.42	1.31	1.21	1.93	1.05	1.18	1.31	1.37	1.31	1.18	1.03	.93	
2	1.26	1.33	1.42	1.53	1.64	1.54	1.42	1.31	1.25	1.97	1.08	1.24	1.36	1.41	1.34	1.24	1.08	.97	
3	1.31	1.37	1.47	1.57	1.65	1.55	1.44	1.34	1.25	2.00	1.13	1.23	1.36	1.43	1.36	1.23	1.13	.96	
4	1.36	1.43	1.45	1.56	1.64	1.55	1.44	1.35	1.27	2.04	1.17	1.25	1.39	1.46	1.39	1.25	1.17	.99	
5	1.41	1.48	1.47	1.57	1.65	1.55	1.44	1.36	1.29	2.08	1.21	1.28	1.42	1.49	1.42	1.28	1.21	1.02	
6	1.46	1.53	1.45	1.56	1.64	1.55	1.44	1.38	1.31	2.12	1.25	1.32	1.46	1.53	1.46	1.32	1.25	1.05	
7	1.51	1.58	1.47	1.57	1.65	1.55	1.44	1.40	1.33	2.16	1.29	1.36	1.50	1.57	1.50	1.36	1.29	1.08	
8	1.56	1.63	1.45	1.56	1.64	1.55	1.44	1.42	1.35	2.20	1.33	1.40	1.54	1.61	1.54	1.40	1.33	1.11	
9	1.61	1.68	1.45	1.56	1.64	1.55	1.44	1.44	1.37	2.24	1.37	1.44	1.58	1.65	1.58	1.44	1.37	1.14	
10	1.66	1.73	1.45	1.56	1.64	1.55	1.44	1.46	1.39	2.28	1.41	1.48	1.62	1.69	1.62	1.48	1.41	1.17	
11	1.71	1.78	1.45	1.56	1.64	1.55	1.44	1.48	1.41	2.32	1.45	1.52	1.66	1.73	1.66	1.52	1.45	1.20	
12	1.76	1.83	1.45	1.56	1.64	1.55	1.44	1.50	1.43	2.36	1.49	1.56	1.70	1.77	1.70	1.56	1.49	1.23	
13	1.81	1.88	1.45	1.56	1.64	1.55	1.44	1.52	1.45	2.40	1.53	1.60	1.74	1.81	1.74	1.60	1.53	1.26	
14	1.86	1.93	1.45	1.56	1.64	1.55	1.44	1.54	1.47	2.44	1.57	1.64	1.78	1.85	1.78	1.64	1.57	1.29	
15	1.91	1.98	1.45	1.56	1.64	1.55	1.44	1.56	1.49	2.48	1.61	1.68	1.82	1.89	1.82	1.68	1.61	1.32	
16	1.96	2.03	1.45	1.56	1.64	1.55	1.44	1.58	1.51	2.52	1.65	1.72	1.86	1.93	1.86	1.72	1.65	1.35	
17	2.01	2.08	1.45	1.56	1.64	1.55	1.44	1.60	1.53	2.56	1.69	1.76	1.90	1.97	1.90	1.76	1.69	1.38	
18	2.06	2.13	1.45	1.56	1.64	1.55	1.44	1.62	1.55	2.60	1.73	1.80	1.94	2.01	1.94	1.80	1.73	1.41	
19	2.11	2.18	1.45	1.56	1.64	1.55	1.44	1.64	1.57	2.64	1.77	1.84	1.98	2.05	1.98	1.84	1.77	1.44	
20	2.16	2.23	1.45	1.56	1.64	1.55	1.44	1.66	1.59	2.68	1.81	1.88	2.02	2.09	2.02	1.88	1.81	1.47	
21	2.21	2.28	1.45	1.56	1.64	1.55	1.44	1.68	1.61	2.72	1.85	1.92	2.06	2.13	2.06	1.92	1.85	1.50	
22	2.26	2.33	1.45	1.56	1.64	1.55	1.44	1.70	1.63	2.76	1.89	1.96	2.10	2.17	2.10	1.96	1.89	1.53	
23	2.31	2.38	1.45	1.56	1.64	1.55	1.44	1.72	1.65	2.80	1.93	2.00	2.14	2.21	2.14	2.00	1.93	1.56	
24	2.36	2.43	1.45	1.56	1.64	1.55	1.44	1.74	1.67	2.84	1.97	2.04	2.18	2.25	2.18	2.04	1.97	1.59	
25	2.41	2.48	1.45	1.56	1.64	1.55	1.44	1.76	1.69	2.88	2.01	2.08	2.22	2.29	2.22	2.08	2.01	1.62	
26	2.46	2.53	1.45	1.56	1.64	1.55	1.44	1.78	1.71	2.92	2.05	2.12	2.26	2.33	2.26	2.12	2.05	1.65	
27	2.51	2.58	1.45	1.56	1.64	1.55	1.44	1.80	1.73	2.96	2.09	2.16	2.30	2.37	2.30	2.16	2.09	1.68	
28	2.56	2.63	1.45	1.56	1.64	1.55	1.44	1.82	1.75	3.00	2.13	2.20	2.34	2.41	2.34	2.20	2.13	1.71	
29	2.61	2.68	1.45	1.56	1.64	1.55	1.44	1.84	1.77	3.04	2.17	2.24	2.38	2.45	2.38	2.24	2.17	1.74	
30	2.66	2.73	1.45	1.56	1.64	1.55	1.44	1.86	1.79	3.08	2.21	2.28	2.42	2.49	2.42	2.28	2.21	1.77	
31	2.71	2.78	1.45	1.56	1.64	1.55	1.44	1.88	1.81	3.12	2.25	2.32	2.46	2.53	2.46	2.32	2.25	1.80	
Avg.	1.96	1.81	1.65	1.45	1.65	1.53	1.42	1.31	1.21	1.96	1.07	1.20	1.35	1.41	1.33	1.17	1.05	.97	

## NET RADIATION

Net radiation in langleys per day (8 a.m. to 8 p.m.) at Palmer, Alaska.

Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langleys	- 97	-108	159	- 81	- 11	- 5	- 30	- 18	- 8	- 73	-111	-120	-164	-129	- 64	- 34	- 24	- 73	- 87	- 45	- 47	- 10	- 91	- 28	- 30	- 30	- 31	- 36	- 52	- 98	-112	- 65



# REFERENCE NOTES

## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES:

Dates in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

- + And also on an earlier date or dates.
- D Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snowfall.

## CLIMATOLOGICAL DATA - METRIC UNITS: Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

- B Number of days maximum 21.1°C. or above for Alaskan Stations.
- Y Peak Gust.
- + And also on an earlier date or dates.
- U Indicates Urban site.
- R Indicates Rural site.
- Ø Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

- 1 foot = 0.3048 meters
- °F. =  $\frac{9}{5} \times ^\circ\text{C} + 32$
- 1 inch = 25.4 millimeters
- 1 mile per hour = 0.447 meters per second

## HEATING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

## COOLING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

## STORM SUMMARY:

- o Includes crop damage.
- C Crop damage.
- \* No occurrence of storms or unusual weather phenomena reported.
- @ Includes heavy sleet storm.
- # Freezing drizzle and freezing rain, commonly known as glaze.
- Ø For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.
- ‡ No Storm Data Report received for this State.
- ◇ Report Incomplete.
- + Storm damages are placed in categories varying from 1 to 9 as follows:
  - 1 Less than \$50
  - 2 \$50 to \$500
  - 3 \$500 to \$5,000
  - 4 \$5,000 to \$50,000
  - 5 \$50,000 to \$500,000
  - 6 \$500,000 to \$5 Million
  - 7 \$5 Million to \$50 Million
  - 8 \$50 Million to \$500 Million
  - 9 \$500 Million to \$5 Billion

## RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, G.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Dew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Dew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Dew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygrometers. These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

- \* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.
- + Observations for these stations are scheduled at 0000 G.C.T.
- † Dew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Dew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Dew Point temperatures replaced Relative Humidity January 1967.

**SOLAR RADIATION INTENSITIES:** Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

( )	Clouds Present	DM	Moderate Dust	HM	Moderate Haze	KS	Slight Smoke
*	Values corresponding to true solar noon	DS	Slight Dust	HS	Slight Haze	M	Moderate Haze-indeter-
BD	Blowing Dust	F	Fog	I	Intense Haze-indeterminable		minable
BW	Blowing Sand	GF	Ground Fog	K	Smoke	N	Sand
D	Dust	H	Haze	KI	Intense Smoke	S	Slight Haze-indeter-
D1	Intense Dust	HI	Intense Haze	KM	Moderate Smoke		minable

**NET RADIATION:** The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of sod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.

## DESCRIPTION OF CHARTS

CHART I. A. NORMAL DAILY AVERAGE TEMPERATURE ( $^{\circ}\text{F}$ . 1941-70) FOR MONTH. B. TEMPERATURE DEPARTURE FROM 30-YEAR MEAN ( $^{\circ}\text{F}$ . 1941-70) FOR MONTH. Chart I-A is reproduced from monthly normals maps prepared at the National Climatic Center. Chart I-B is a reproduction of monthly chart appearing in "Weekly Weather and Crop Bulletin," a publication of Environmental Data Service.

CHART II. A. TOTAL PRECIPITATION. Chart II. A. is a reproduction of monthly chart appearing in "Weekly Weather and Crop Bulletin."

CHART II. B. PERCENTAGE OF NORMAL PRECIPITATION. Chart II. B. is a reproduction of monthly chart appearing in "Weekly Weather and Crop Bulletin."

CHART III. TRACKS OF CENTERS OF ANTICYCLONES AT SEA LEVEL.

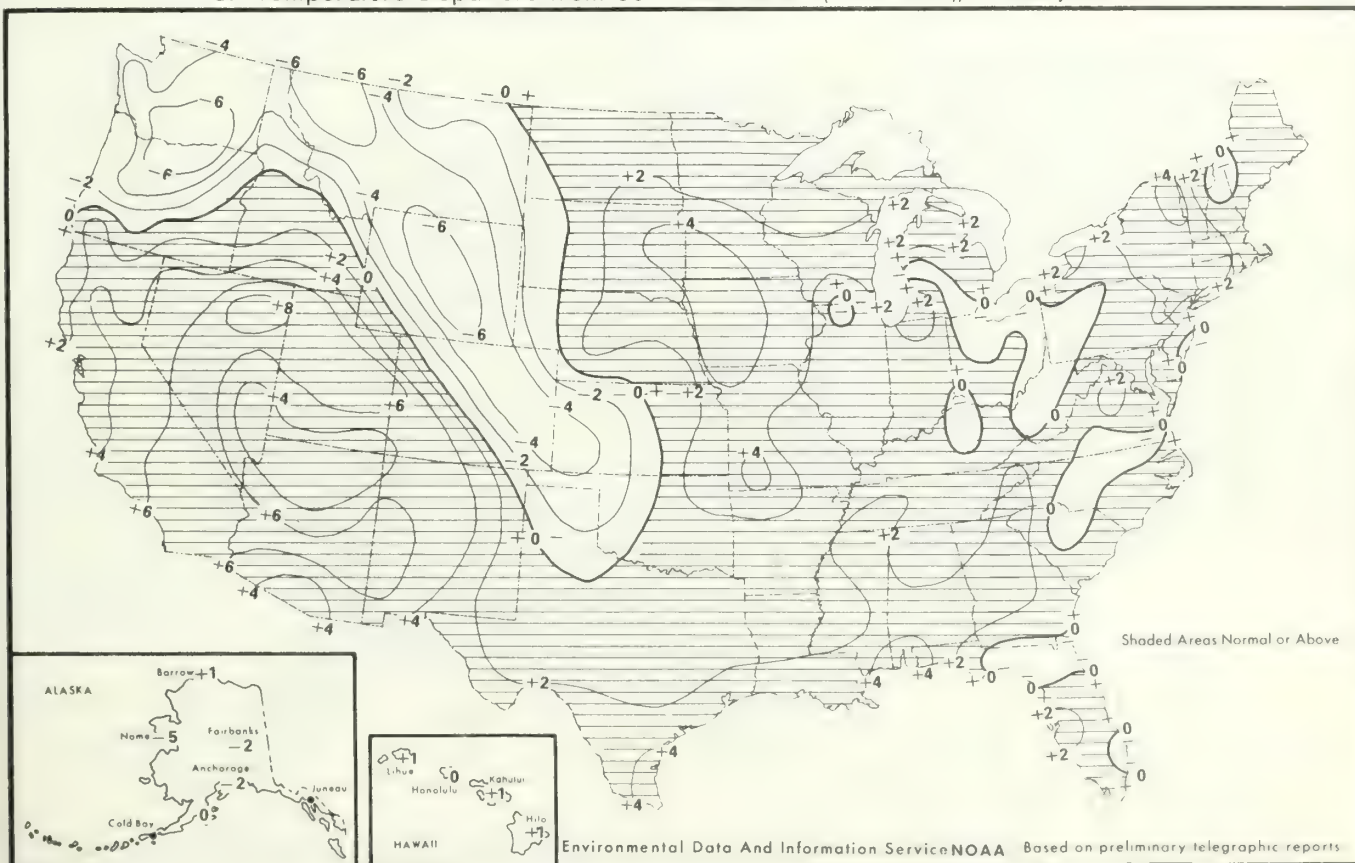
CHART IV. TRACKS OF CENTERS OF CYCLONES AT SEA LEVEL. Centers which can be identified for 24 hours or more are tracked in these charts. Semi-permanent features such as the Great Basin and Pacific Highs and Colorado and Mexico Lows are not shown. The 7:00 a.m., e.s.t., positions are shown by open circles, with the intermediate positions at 6-hour intervals shown by X's. The date is given above the circle and the central pressure to whole millibars below. A dashed track indicates a regeneration rather than actual movement to the next position. Squares indicate position of stationary center for period shown beside it.



Chart 1. A. Normal Daily Average Temperature (°F. 1941-70), January

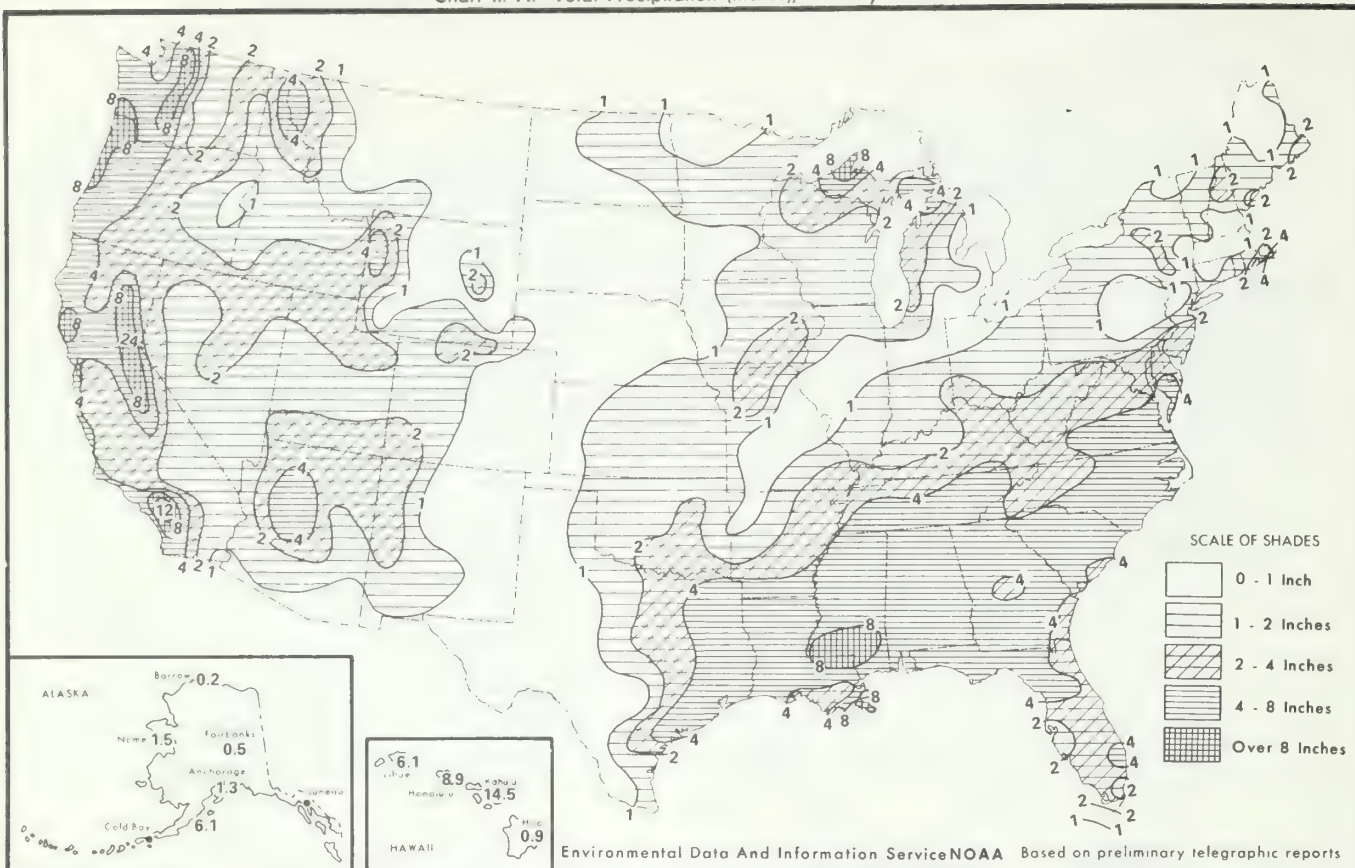


B. Temperature Departure from 30 - Year Mean (°F 1941-70), January 1980

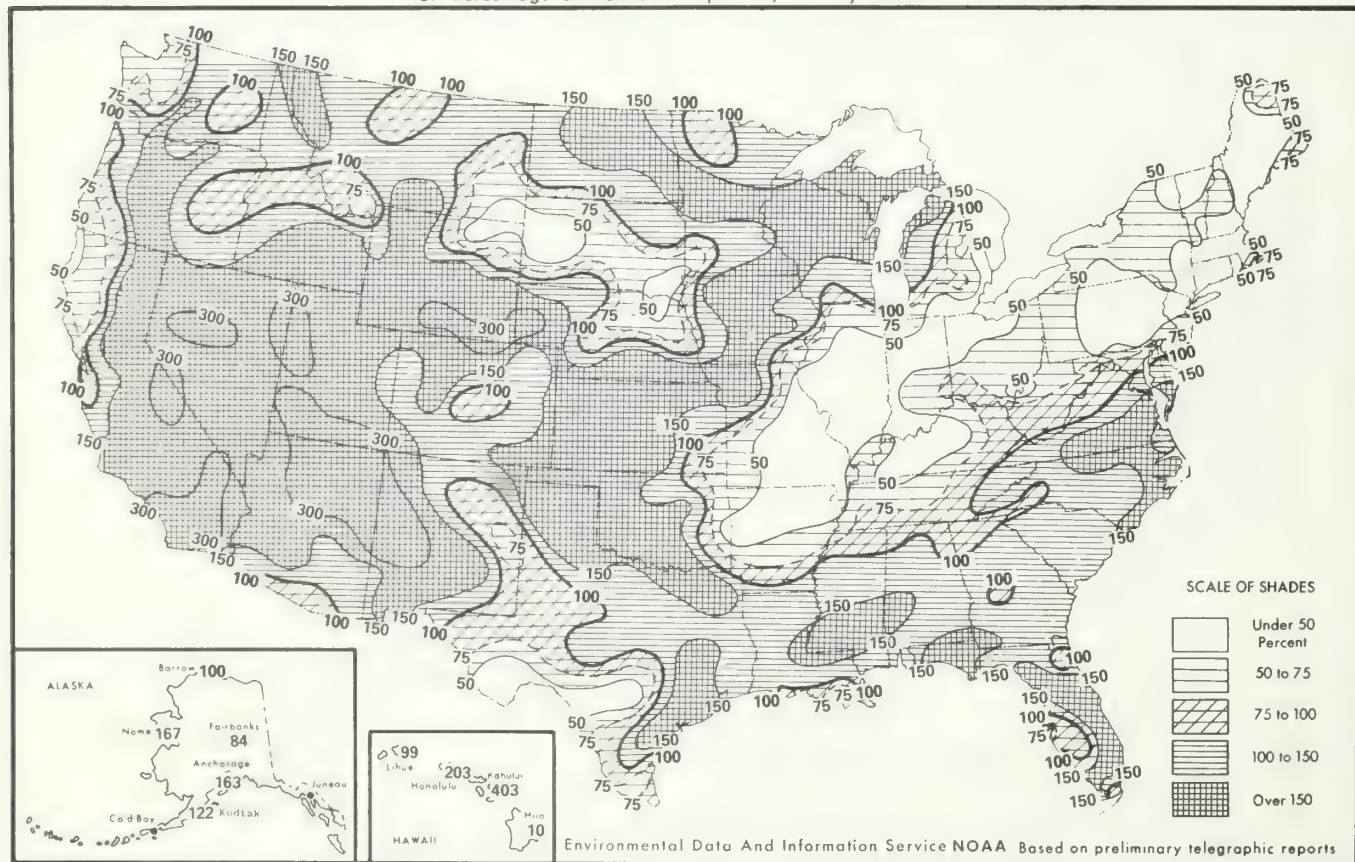


Environmental Data And Information Service NOAA Based on preliminary telegraphic reports

Chart II. A. Total Precipitation (Inches), January 1980



B. Percentage of Normal Precipitation, January 1980





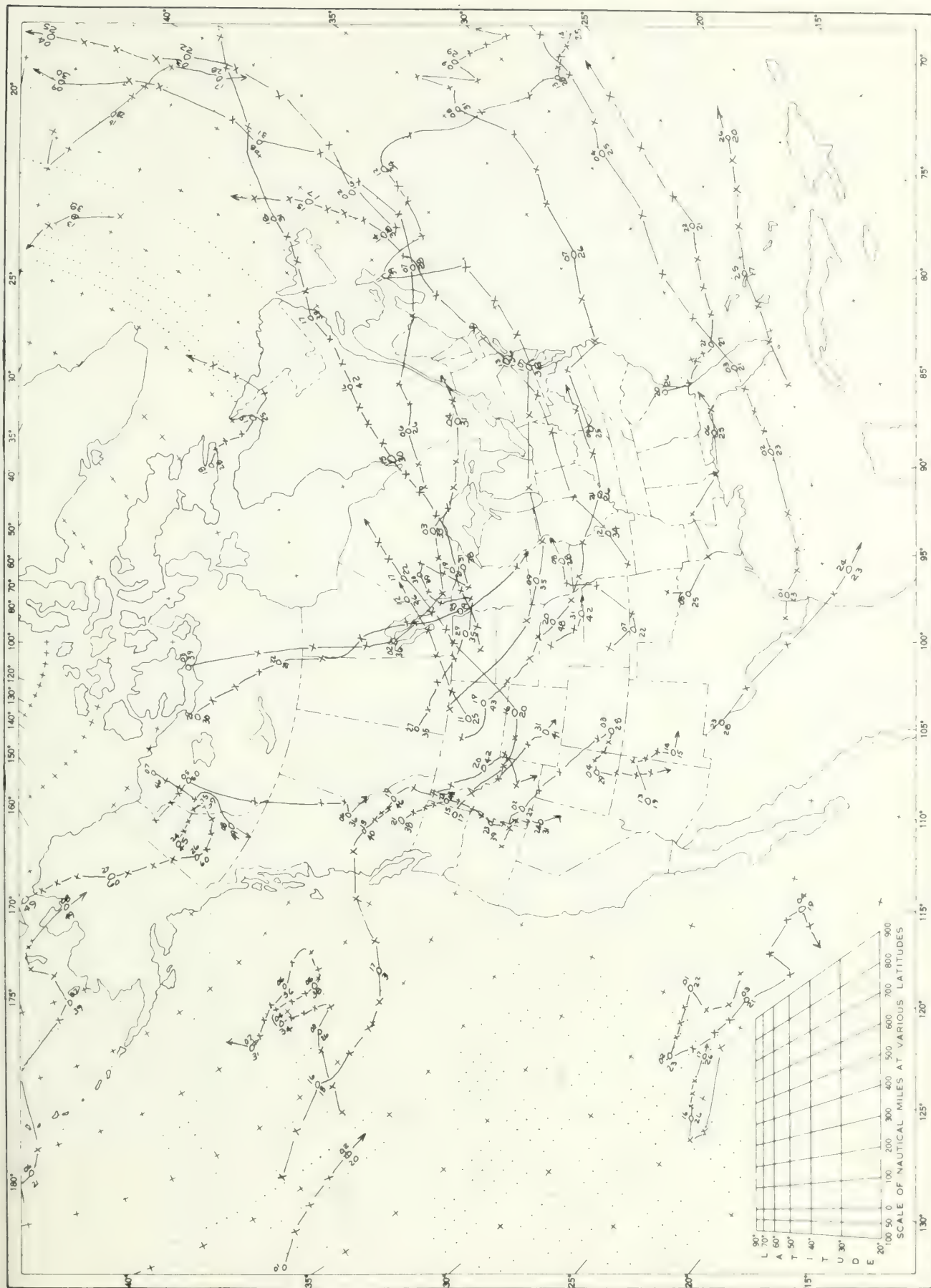
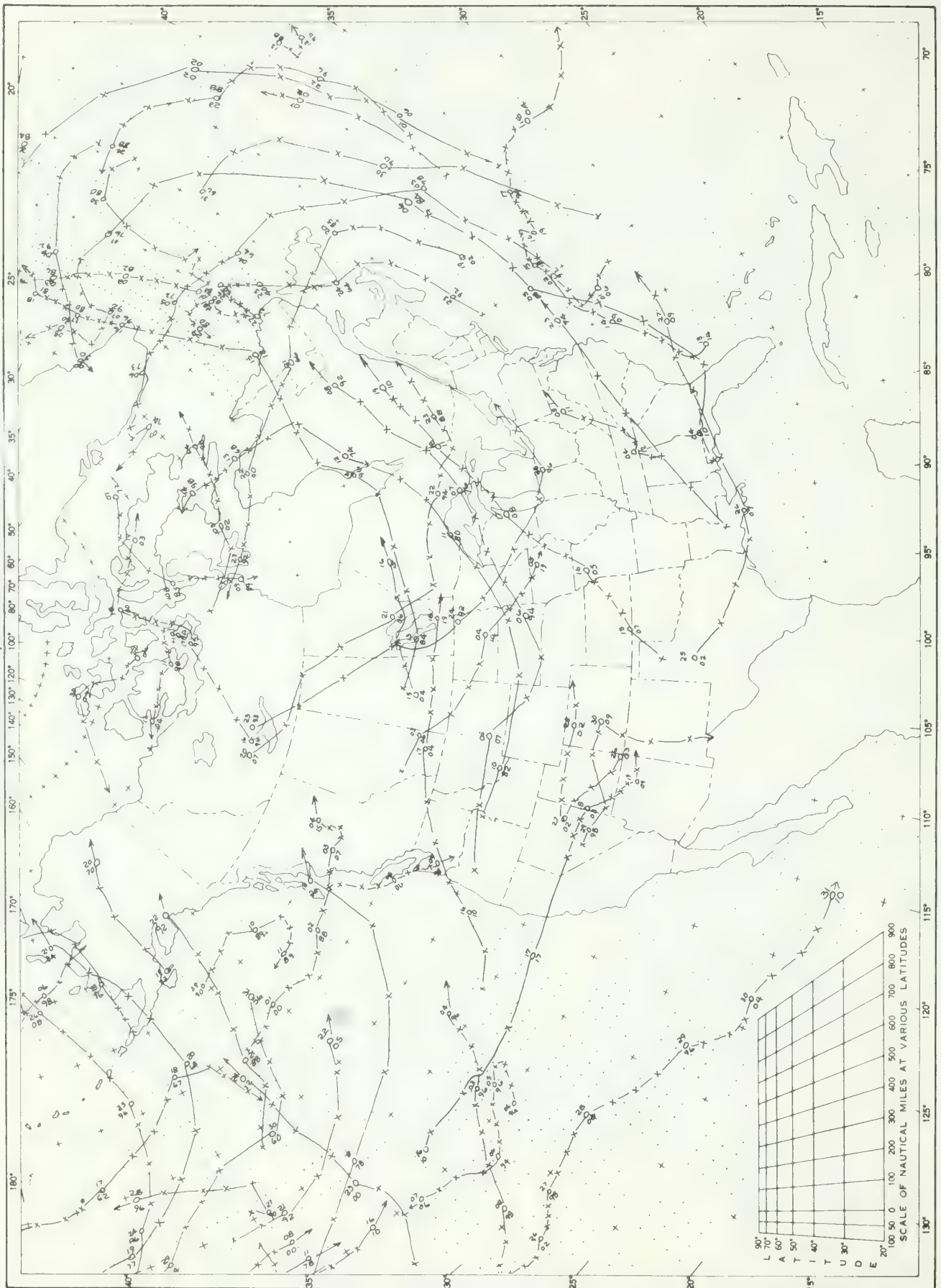
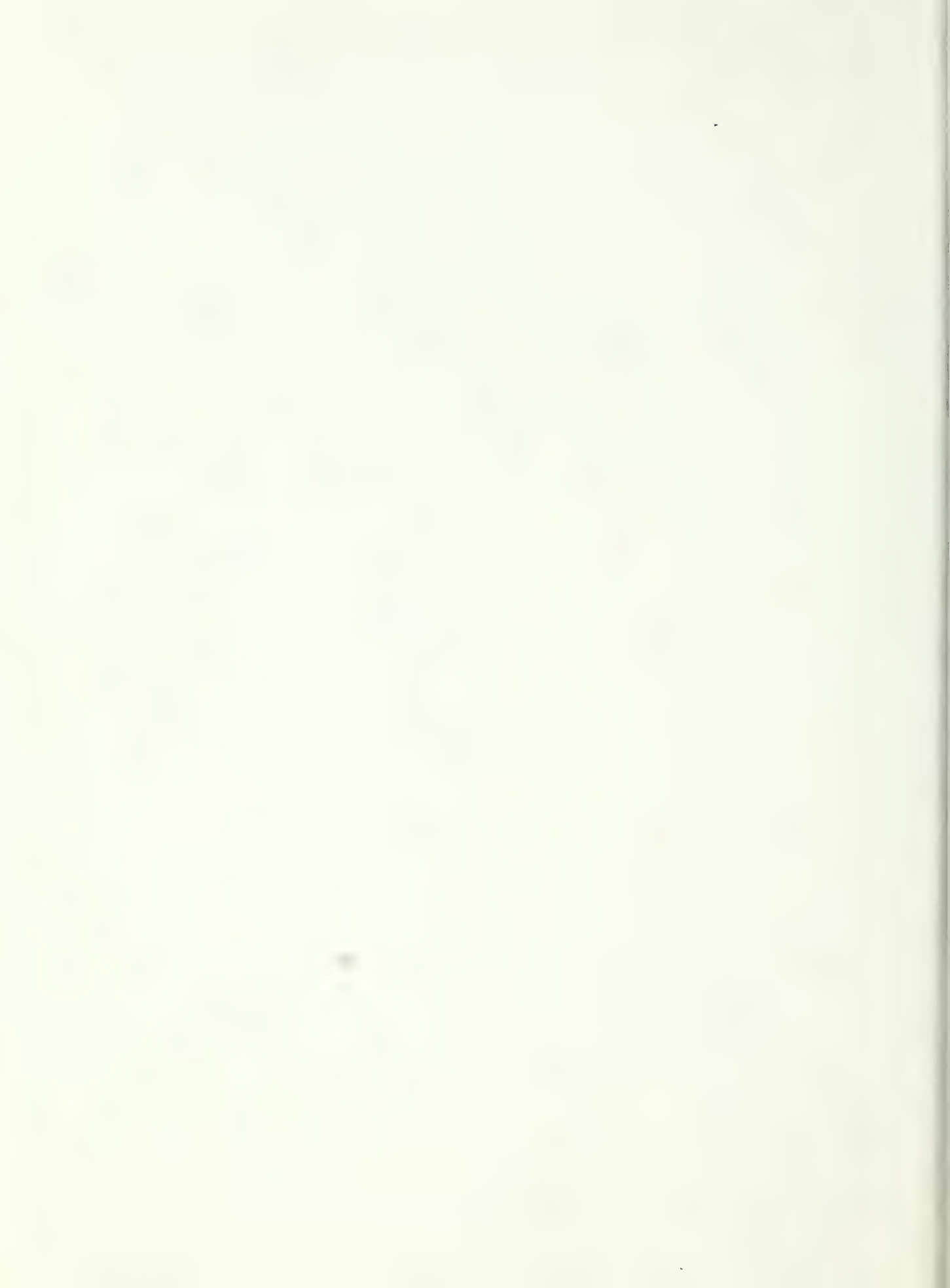


Chart IV. Tracks of Centers of Cyclones at Sea Level, January 1980













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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



"I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AND IS COMPILED FROM INFORMATION RECEIVED AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA 28801."

*Samuel B. Mitchell*

DIRECTOR  
NATIONAL CLIMATIC CENTER

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NOTE: Late reports and corrections will be carried in the June and December issues of this publication. An explanatory page "Description of Charts" will be carried in the January and July issues.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

FEBRUARY 1980

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist  
Environmental Data and Information Service, NOAA

**HIGHLIGHTS:** Storms out of the southern Pacific Ocean brought torrential rain to southern California and heavy rain to parts of Arizona. Warm air, borne eastward by the westerly flow, enveloped the entire Nation by midmonth. Winter temperatures were temporarily displaced by the warmer air, but by the end of the month, winter returned to the East with a vengeance when a frigid arctic airmass moved out of Canada. Precipitation for the month ranged well above normal for most of the area west of the Rockies but fell short of normal in the East.

Winter was in full swing as February began. Very cold air chilled all of the Nation except the Southwest and the extreme northern Plains. Freezing temperatures reached into Florida as far south as Tampa and Orlando on the 2d and 4th. Warming began in the West and northern Plains during the period of the 4th-10th, but the central Plains and the Southeast remained much colder than normal.

Seasonally heavy rain, snow at high elevations, persisted in the Pacific Northwest during the first 10 days, but southern California spent the period drying out from previous deluges. Elsewhere, snow lay down a protective blanket in the central Plains. By the 10th up to a foot of snow covered Kansas. Rain was heavy from eastern Texas through Georgia, and heavy snow fell in parts of the Appalachians and mid-Atlantic States.

Heavy rain returned to southern California during the week of the 11th-17th. The hills around Los Angeles recorded as much as 20 inches. Rain was heavy throughout the State and into Arizona; flooding and property loss resulted. Precipitation fell comparatively lightly through the rest of the Nation in this second week

of February. Snow dusted Montana and Wyoming and was somewhat heavier from the lower Ohio Valley through New England. Light rain in western Texas increased in intensity as it edged eastward through the Gulf Coast States. Warm weather persisted in the Southwest. The northern States from North Dakota through New England neared normal. Temperatures averaged much colder than normal from central Montana through the central Plains.

The series of storms from the southern Pacific Ocean continued to plague southern California, Arizona and the central Plateau during most of the week of the 18th-24th, but the storms moved further north by the end of the week. Warm weather moved across the entire United States with a westerly flow of air. Snowcover receded to the mountain ridges, the upper Mississippi Valley, and New England. Light to moderate rain fell in the area east of the Mississippi River. Temperatures, averaged for the week, ranged as much as 9° above normal in many parts of the Nation.

Warm weather continued to the midpoint of the last 5 days; however, an arctic airmass spilled out of Canada through the Dakotas and spread rapidly southward and eastward. Many record low temperatures were established as the frigid air enveloped areas east of the Rockies. Snow fell from Montana through the Great Lakes and in the Midwest. Light amounts fell in parts of the central Plains. Heavy rain fell along the West Coast earlier in the week. At the end of the month, the cold air clashed with warm, moist air from the Gulf of Mexico and an intense storm was building in southern Louisiana; heavy rain fell along the coast.

## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

FEBRUARY 1980

STATE	Temperature						Precipitation				
	Monthly extremes						Monthly extremes				
	Station	Highest °F	Date	Station	Lowest °F	Date	Station	Greatest In.	Station	Least In.	
Alabama	Greensboro	85	24	East Overlook	-6	18	Wadley	6.03	Brundidge	.72	
Alaska	Elkton Pt Jet	8	11	Barrow	-54	2	Little Port Walter	21.89	Idk	.00	
Arizona	4 Stations	88	27+	Hawley Lake	-20	10	Crown King	16.63	Dateland Whitewg Rch	.69	
Arkansas	De Queen	88	22	2 Stations	3	17+	Oden 1 E	3.16	Booneville 3 SSE	.31	
California	2 Stations	88	26	Bodie	-9	9	Lytle Creek Ranger Station	30.89	Maricopa	.65	
Colorado	Pueblo WSO AP	81	27	Rio Grande Reservoir	-46	1+	Wolf Creek Pass 1 E	19.08	Wooton Ranch	.00	
Connecticut	Newport Pub Well Pkt	84	20	Falls Village	-13	18	West Hartford	1.26	Shepaug Dam	.65	
Delaware	4 Stations	80	24+	Middletown 1 WSW	5	28	Milford 2 WSW	1.33	Dover	.71	
Florida	La Brea	89	24	2 Stations	18	4+	Mayo	4.48	Crescent City	.60	
Georgia	Surrency 2 WNW	88	23	Shilohville Exp Sta	7	18+	Warrenton	6.78	Fort Gaines	.76	
Hawaii	2 Stations	89	4	Mauna Kea OBS 111.2	23	29	Ookala	11.69	Mauna Kea Obs 111.2	.02	
Idaho	Glenns Ferry	74	28	2 Stations	-15	9+	Sandpoint KSPT	4.27	Mackay Ranger Station	.01	
Illinois	3 Stations	87	24+	Mount Carroll	-17	17	Rantoul	2.87	Quincy Dam 21	.27	
Indiana	2 Stations	84	22	Hemeland	-12	17	Crawfordsville PWR PL	2.66	Hobart	.51	
Iowa	Maquoketa	82	26	Hawarden	-20	1	Oskaloosa	1.84	Shenandoah 1 NE	.24	
Kansas	Aetna 2 S	77	27	2 Stations	-17	17+	Galesburg	2.34	Bird City 11 SSW	.27	
Kentucky	Germanaw 1 WSW	75	23	Grayson 2 S	-16	24	Freeburn 2 SW	2.93	Beaver Dam	.75	
Louisiana	Natchitoches	88	24	3 Stations	16	24	Oakdale	6.74	Vermilion Lock	.56	
Maine	Madison	51	21	Squa Pan Dam	-28	27	Jonesboro	2.20	Clayton Lake 2	.33	
Maryland	Glenn Dale Bell Sta	84	21	Oakland 1 SE	-13	13	MC Henry 2 NW	2.15	Unionville	.61	
Massachusetts	2 Stations	55	21	Chester 2	-15	18	2 Stations	1.58	Framingham	.67	
Michigan	Saint Charles	49	20	Trout Lake	-39	29	Copper Harbor 3 WSW	3.30	Fayette 3 SW	.15	
Minnesota	Winona	46	20	2 Stations	-36	29	Gunflint Lake 10 NW	01.57	Minnesota City Dam 5	.16	
Mississippi	2 Stations	85	23+	2 Stations	8	18+	MC Comb FAA AP	4.80	Independence 3 N	.86	
Missouri	2 Stations	78	29	Shelbina	-18	1	Centerville	2.99	Maryville 2 E	.32	
Montana	Helena	72	17	Mythic Lake	-27	4	Hungry Horse Dam	2.54	Fort Peck Power Plant	.00	
Nebraska	Benkelman	72	28	Osmond	-44	1	Halsey 2 W	1.80	Hartington	.18	
Nevada	Bunkerville 2 SW	79	27	2 Stations	-8	1	Mount Rose Bowl	9.47	Central Nev Field Lab	.18	
New Hampshire	Lancaster	54	20	Mount Washington	-30	29	Milan 7 NNW	1.25	Hanover	.27	
New Jersey	2 Stations	70	21	Newton St Pauls Abbey	-10	19	Millville FAA AP	1.37	Woodstown	.72	
New Mexico	Jal	85	28	Eagle Nest	-13	4	Chama	4.94	3 Stations	.00	
New York	NV Westerleigh Sta 15	58	21	Wassena Ranger School	-23	2	Hooker 5 N	3.07	Valatie 1 N	.27	
North Carolina	Kinston 5 SE	82	28	Grandfather Mountain	-7	1	Southport 5 N	3.29	Black Mountain	.27	
North Dakota	2 Stations	61	28	Upham 1 N	-38	29	San Haven	1.41	Fort Yates	.7	
Ohio	Ironton	71	23	Canfield 1 S	-14	5	Dorset	3.31	Roseville	.46	
Oklahoma	Lindsay	80	24	Ponca City FAA AP	-8	10	Daisy 4 ENE	3.04	2 Stations	.11	
Oregon	2 Stations	75	25	2 Stations	4	1	Laurel Mountain	16.29	Rome 2 NW	.23	
Pennsylvania	2 Stations	88	23	Clermont 4 NW	-20	29	Laurel Mtn State Park	3.04	Carlisle	.21	
Puerto Rico	Mayaguez PLEER	86	20	Pico Del Este	44	19	Pico Del Este	8.29	Puerto Real	.00	
Rhode Island	Providence WSO AP	50	21	Kingston	2	4	Kingston	1.42	Block Island WSO AP	.80	
South Carolina	Ridgeland 5 NE	86	23	Caesars Head	4	1	Aiken 4 NE	3.39	Chester	.91	
South Dakota	2 Stations	72	27	Everfield 4 NW	-24	16	Mission 14 SSE	1.68	Glad Valley 2 W	.7	
Tennessee	3 Stations	78	24+	Greenville Exp. Sta.	-4	2	Onida	2.78	Greenville Exp Sta	1.04	
Texas	Laredo 2	77	20	Henrietta	0	10	Goliad 1 SE	5.10	4 Stations	.00	
Utah	La Verkin	74	27	Scofield Dam	-34	1	Alta	13.73	Vernal Airport	.10	
Vermont	Enosburg Falls	53	20	Enosburg Falls	-28	27	Mount Mansfield	2.86	Bristol 5 NNW	.50	
Virginia	Danville-Bridge St	72	24	Burkes Garden	-10	5	Mt Lake Biological Sta	2.94	Pulaski 2 E	.35	
Virgin Islands	Truman Fld FAA AP	90	6	Beth Upper New Works	62	21	Charlotte Amalie 2	2.77	East Hill	.81	
Washington	3 Stations	64	26+	2 Stations	-6	4+	Aberdeen 20 NNE	25.30	St. John	1.01	
West Virginia	Dunlow 6 SE	74	22	Bartow 1 WNW	-12	14+	Snowshoe	3.83	Wardensville R M Farm	.49	
Wisconsin	Dodge	46	19	Landwehr 7 W	-30	17	Milwaukee WSO AP	1.75	Minocqua Dam	.04	
Wyoming	Weston 1 E	68	27	Minne	-39	1	Snake River	2.92	7 Stations	.7	



# CLIMATOLOGICAL DATA

## METRIC UNITS

FEBRUARY 1967

State and Station	Elevation (ground)	Pressure		Temperature						Precipitation				Wind			No. of days (sunrise to sunset)		Sky cover, tenths (sunrise to sunset)	%																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
		Station	Sea level	Average maximum	Average minimum	Departure from normal		Highest	Lowest	Date		No. of days	Average relative humidity	Total	Departure from normal	Greatest in 24 hours					With thunderstorms .25 mm. or more	Maximum depth of ice pellets	Snow.	Resultant speed	Resultant direction	Speed (1.6 kilometers)	Direction																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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# CLIMATOLOGICAL DATA

## METRIC UNITS

FEBRUARY 1980

State and Station	Elevation (ground)	Pressure		Temperature						Precipitation				Wind				No. of days (sunrise to sunset)			Possible sunshine																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	No. of days		Total	mm	Departure from normal	Greatest in 24 hours					No. of days		Total	mm	Resultant speed	Resultant direction	Speed	Direction																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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# CLIMATOLOGICAL DATA

## METRIC UNITS

FEBRUARY 1982

State and Station	Pressure		Temperature				Precipitation				Wind				No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	Elevation (ground)	Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Lowest	Date	No. of days		Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours		With thunderstorms	No. of days	Snow, ice pellets		Resultant speed	Resultant direction	Speed	Direction	Date	Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
											Max 32° or above	Min. 0° or lower									mm	mm									mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm



# CLIMATOLOGICAL DATA

## METRIC UNITS

FEBRUARY 1960

State and Station	Elevation (ground)	Pressure		Temperature										Precipitation					Wind				No. of days (sunrise to sunset)	Sky cover, tenths (sunrise to sunset)	Possible sunshine																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
		Station	Sea level	Average maximum		Average minimum		Departure from normal	Highest		Date	Lowest	Date	No. of days		Average dew point	Average relative humidity	Total	mm	Greatest in 24 hours	.25 mm. or more	With thunderstorms				Total	mm	Departure from normal	mm	Resultant speed	mm/s	Resultant direction	Speed	Direction	Fastest mile (1.6 kilometers)	Date																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
				°C	°F	°C	°F		°C	°C				°C	°C																						°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°

## METRIC UNITS

State and Station



# CLIMATOLOGICAL DATA

METRIC UNITS

FEBRUARY 1980

State and Station	Elevation (ground)	Pressure		Temperature										Precipitation						Wind				No. of days (sunrise to sunset)		Possible sunshine (sunrise to sunset)						
		Station Q	Sea level	Average maximum		Average minimum		Average	Departure from normal	Highest	Lowest	Date	No. of days		Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	25 mm. or more	With thunderstorms	Total	Snow, ice pellets				Resultant speed	Resultant direction	Speed (1.6 kilometers)	Direction	Date	Clear 0-3
				C	C	C	C	C	C	C	C	C	C	C	Max 32.2 °C or above	Min. 0 °C or lower								C	mm							
ALABAMA																																
ANN ARBOR, MI	182	007.7	1011.2	9.7	7.7	6.6	0.6	16.0 24	-6.6 15	-6.6 15	0 4	2.4	80	18	2	21 18	0	0	54	76	1.8	18	18	3 13	1 1	0	3	26	4.8	32		
ANN ARBOR, MI	715	031.6	1017.6	7.7	-1.7	1.4	1.3	12.7 27	-11.1 14	-11.1 14	0 16	-1.1	63	9	-9	7 14	0	0	156	51	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7	6.7	-4.7	-0.6	-0.2	4.4 28*	-13.3 14	-13.3 14	0 26	-1.1	53	18	-9	2 1	0	0	1.93	23.2	1.4	7	11.6	80 14	0	0	3	26	4.8	15		
ANN ARBOR, MI	1206	070.7	1017.7																													

## HEATING DEGREE DAYS

(Base 65°F.)

FEBRUARY 1980

State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month
	This month	Period July through this month			This month	Period July through this month			This month	Period July through this month			This month	Period July through this month	
ALABAMA				IDAHO				NEBRASKA				TENNESSEE			
BIRMINGHAM U	668	2446	2070	BOISE	725	3956	4290	GRAND ISLAND	1191	4858	4859	BRISTOL	990	3461	3358
BIRMINGHAM	655	2313	2335	LEWISTON	770	3752	4046	LINCOLN	1241	4730	4761	CHATTANOOGA	813	2891	2826
MONTVILLE	793	2881	2683	POCATELLO	876	4810	5113	NOFOLK	1258	5093	5281	KNOXVILLE	815	2857	2794
MOBILE	454	1434	1433					NORTH PLATTE	1102	4675	5001	MEMPHIS	733	2502	2636
MONTGOMERY	444	1743	1899	ILLINOIS				OMAHA (EPPLEY)	1290			NASHVILLE	848	3020	2973
ALASKA				CAIRO U	898	3114	3070	OMAHA (NORTH)	1241	4782	4984	OAK RIDGE	883	3251	3118
ANCHORAGE	1083	6753	7845	CHICAGO O HARE	1254	4703	4818	SCOTTSBLUFF	1019	4672	4921	TEXAS			
ANNETTE	698	4337	4757	COLINE	1324	4999	4887	VALENTINE	1189	5240	5368	ABILENE	496	2103	2156
BARROW	2166	12212	13419	PEORIA	1320	4898	4660	NEVADA				AMARILLO	788	3463	3239
BARTER ISLAND	2168	12339	13268	SPRINGFIELD	1380	5372	5115	ELKO	747	4081	5345	AUSTIN	357	1448	1480
BEHEM	1532	4656	9152		1249	4359	4257	FLY	865	4749	5429	BROWNSVILLE	180	591	565
BOTTLER	1742	11591	11629	INDIANA				LAS VEGAS	335	1794	2155	CORPUS CHRISTI	247	812	816
BIG DELTA	1335	8859	10159	EVANSVILLE	1103	3836	3613	RENO	701	3711	4263	DALLAS FT WORTH	530	2009	1973
COLD BAY	1143	6467	6413	FORT WAYNE	1294	4900	4649	WINNEMUCCA	667	3982	4704	DEL RIO	279	1204	1352
FAIRBANKS	1415	9217	10781	INDIANAPOLIS	1224	4468	4236					EL PASO	410	2220	2275
GULKANA	1412	9020	10338	SOUTH BEND	1195	4413	4790	NEW HAMPSHIRE				GALVESTON	348	1125	1025
HOMER	968	6419	7112	IOWA				CONCORD	1324	5256	5388	HOUSTON INTERCON	350	1371	1231
JUNEAU	895	5746	6280	DES MOINES	1263	4783	5106	MT WASHINGTON OBS	1853	9404	9460	LUBBOCK	592	2721	2838
KANG SALMON	1276	7681	8071	DURRUE	1354	5291	5439	NEW JERSEY				MIDLAND	535	2245	2189
KODIAK	877	5317	5862	STOUT CITY	1287	5175	5309	ATLANTIC CITY	1050	3862	3666	PORT ARTHUR	377	1366	1292
KOZHELE	1674	10120	10743	WATERLOO	1394	5334	5580	ATLANTIC CITY	931	3259	3359	SAN ANGELO	453	2060	1891
MC GRATH	1539	9721	10660	KANSAS				NEWARK	987	3419	3766	SAN ANTONIO	333	1283	1354
NOME	1501	9168	9635	CONCORDIA	1154	4306	4298	TRENTON U	998	3582	3719	VICTORIA	309	1200	1060
ST. PAUL ISLAND	1190	6337	7091	DODGE CITY	998	4194	3856					WACO	475	1947	1734
TALKEETNA	1177	7737	8406	GOLDEN	936	4410	4501	NEW MEXICO				WICHITA FALLS	649	2415	2387
UNAKAKLET				TOPKA	1123	4211	4067	ALBUQUERQUE	595	3084	3380	UTAH			
VALDEZ	1016	6500	7408	WICHITA	1063	3795	3670	CLAYTON	791	3777	3631	MILFORD	810	4251	4719
YAKUTAT	844	5674	6458					ROSWELL	587	2852	3025	SALT LAKE CITY	835	3909	4426
ARIZONA				KENTUCKY				NEW YORK				VERMONT			
FLAGSTAFF	930	4973	5032	COVINGTON	1182	4186	3860	ALBANY	1303	4904	5111	BURLINGTON	1371	5360	5752
PHOENIX	130	876	1315	LEXINGTON	1057	3821	3640	BAGHAMTON	1294	5117	5276				
TUCSON	202	1105	1438	LOUISVILLE	1021	3579	3588	CINCINNATI	1265	4722	4963	VIRGINIA			
WINSLOW	672	3497	3684					NEW YORK U	969	3338	3583	LYNCHBURG	901	3336	3308
YUMA	50	468	889	LOUISIANA				NEW YORK KENNEDY	1030	3726	3737	NORFOLK	872	2709	2698
ARKANSAS				BATON ROUGE	433	1629	1439	NEW YORK LA GUARDIA	988	3561	3638	PICHMOND	835	2942	3103
FORT SMITH	772	2938	2735	LAKE CHARLES	376	1421	1281	ROCHESTER	1306	4904	4867	POANOKO	893	3327	3337
LITTLE ROCK	693	2442	2744	NEW ORLEANS	385	1302	1257	SYRACUSE	1302	4753	4857	WALLOPS ISLAND	948	3012	3139
NO. LITTLE ROCK	765	2695	2542	SHREVEPORT	494	1918	1819					WASHINGTON			
CALIFORNIA				MAINE				ASHEVILLE	861	3137	3275	OLYMPIA	724	3913	3812
BAKERSFIELD	266	1191	1768	CARIBOU	1534	6529	6904	CAPE HATTERAS R	750	2144	2038	QUILLAYUTE	591	3572	3937
BISHOP	646	3082	3234	PORTLAND	1244	5226	5352	CHARLOTTE	750	2700	2597	SEATTLE	669	3069	3282
BLUE CANYON	694	3478	3640	MARYLAND				GREENSBORO	834	3014	3041	SEATTLE-TACOMA	510	3289	3568
EUREKA U	330	2310	3020	BALTIMORE	967	3449	3591	RALEIGH	820	2837	2805	SPOKANE	880	4751	4944
FRESNO	318	1725	2664	MASSACHUSETTS				WILMINGTON	670	2089	1990	STAMPEDE PASS R	1083	6191	6277
LONG BEACH	116	683	1186	BLUE HILL OBS R	1168	4485	4560					TALLA WALLA U	773	3715	3640
LOS ANGELES	113	583	1181	BOSTON	1071	4011	4062	NORTH DAKOTA				YAKIMA	902	4577	4492
LOS ANGELES U	600	362	846	WORCESTER	1233	4859	4818	RISMARCK	1435	6501	6733	WEST VIRGINIA			
MT SHASTA R	690	3835	4017	MICHIGAN				FARGO	1644	6904	6943	RECKLEY	1130	4313	4205
OAKLAND	231	1367	1994	ALPENA	1390	5842	5963	WILLISTON	1447	6438	6754	CHARLESTON	1017	3692	3564
RED BLUFF	319	1695	2032	DETROIT	1156	4897	4699	OHIO				ELKINS	1203	4595	4436
SACRAMENTO	373	1973	2118	FLINT	1288	4987	5131	AKRON	1202	4651	4606	HUNTINGTON	1033	3616	3583
SAN DIEGO	50	362	1021	GRAND RAPIDS	1221	4744	4943	CINCINNATI ARBE OB	1244	4620	4508	PARKERSBURG U	1057	3841	3712
SAN FRANCISCO	298	1699	2062	HOUGHTON LAKE	1424	5836	5958	COLUMBUS	1148	4285	4327	WISCONSIN			
SAN FRANCISCO U	221	1456	2017	LANSING	1308	5150	5064	DAYTON	1217	4452	4243	GREEN BAY	1380	5726	5948
SANTA MARIA	254	1418	1973	MUSKOGEE	1239	5031	4956	MANSFIELD	1256	4855	4342	LA CROSSE	1358	5512	5622
STOCKTON	300	1689	2143	SAULT STE MARIE	1520	6507	6469	TOLEDO	1256	4857	4717	MADISON	1424	5663	5732
COLORADO				MINNESOTA				YOUNGSTOWN	1270	4817	4722	MILWAUKEE	1290	5042	5394
ALAMOSA	1029	6183	6269	DULUTH	1573	6787	7048	OKLAHOMA				WYOMING			
COLORADO SPRINGS	883	4579	4584	INTERNATIONAL FALLS	1646	7836	7790	OKLAHOMA CITY	771	2908	2968	CASPER	1081	5533	5334
DENVER	876	4385	4321	MINNEAPOLIS	1436	5862	6132	TULSA	801	2860	2969	CHEYENNE	1027	5033	5036
GRAND JUNCTION	741	4072	4338	ROCHESTER	1442	5860	6133	OREGON				LANDER	1145	5729	5669
PUEBLO	797	4113	4638	ST CLOUD	1540	6527	6631	ASTORIA	529	3012	3491	SHERIDAN	1171	5432	5506
CONNECTICUT				MISSISSIPPI				BURNS U	862	4770	5117				
BRIDGEPORT	1064	3910	3874	JACKSON	570	2209	1921	EUGENE	634	3238	3284				
HARTFORD	1174	4508	4705	MERIDIAN	540	2032	2004	MEDFORD	556	3025	3516				
DELAWARE				MISSOURI				PENDLETON	829	4145	3893				
WILMINGTON	1069	3658	3735	COLUMBIA REGIONAL	1108	4105	3935	PORTLAND	647	3033	3370				
DIST OF COLUMBIA	977	3605	3798	KANSAS CITY	1148	4196	4156	SALEM	627	3279	3354				
WASHINGTON DULLES	870	2890	3282	ST JOSEPH	1148	4226	4234	SEXTON SUMMIT R	684	3788	4148				
WASHINGTON NATIONAL				ST LOUIS	1071	3765	3710	PENNSYLVANIA							
FLORIDA				SPRINGFIELD	941	3393	3557	ALLENTOWN	1087	4035	4362				
APALACHICOLA U	406	1224	1165					ERIE	1275	4551	4871				
DAYTONA BEACH	297	784	766	MONTANA				HARRISBURG	1033	3973	4012				
FORT MYERS	163	306	412	WILLINGS	1073	4774	5221	PHILADELPHIA	1016	3662	3688				
JACKSONVILLE	406	1256	1135	GLASGOW	1404	6144	6574	PITTSBURGH	1177	4486	4418				
KEY WEST	50	57	59	GREAT FALLS	1066	5099	5442	SCRANTON	1175	4392	4671				
MIAMI	75	161	191	HAVRE	1239	5657	6385	WILLIAMSPORT	1134	4398	4467				
ORLANDO	245	572	631	HELENA	1148	5605	5897	RHODE ISLAND							
PENSACOLA	415	1313	1340	KALISPELL	1084	5655	6146	BLOCK ISLAND	1011	3548	3680				
TALLAHASSEE	442	1493	1342	MILES CITY	1143	5451	5854	PROVIDENCE	1104	4047	4308				
TAMPA	262	597	624	MISSOULA	1018	5385	5752								
WEST PALM BEACH	153	36	276					SOUTH CAROLINA							
GEORGIA								CHARLESTON	555	1821	1785				
ATHENS	644	2275	2419					CHARLESTON U	472	1488	1582				
ATLANTA	668	2290	2499					COLUMBIA	680	2395	2159				
AUGUSTA	631	2226	2116					GRNVILLE-SPRTNBGR	737	2549	2559				
COLUMBUS	529	1759	1960												
MACON	534	1759	1883					SOUTH DAKOTA							
ROME	751							ABERDEEN	1452	6099	6470				
SAVANNAH	489	1567	1645					HURON	1343	5670	6061				
								RAPID CITY	1094	4912	5248				
								STOUT FALLS	1349	5646	5904				



## (Base 65° F.)

FEBRUARY 1980

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# STORM SUMMARY

FEBRUARY 1980

STATE	TORNADOES				HAILSTORMS				WINDSTORMS				LIGHTNING				@HEAVY SNOWSTORMS AND BLIZZARDS				# ICE STORMS				φ ALL OTHER			
	NUMBER	DAYS	DEATHS	INJURIES	DAMAGE	DEATHS	INJURIES	DAMAGE		DEATHS	INJURIES	DAMAGE		DEATHS	INJURIES	DAMAGE		DEATHS	INJURIES	DAMAGE		DEATHS	INJURIES	DAMAGE				
								PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS							
Alabama																												
Arizona																												
Arkansas																												
California																												
Colorado																												
Connecticut																												
Florida																												
Georgia																												
Hawaii																												
Illinois																												
Indiana																												
Iowa																												
Kansas																												
Kentucky																												
Louisiana																												
Maine																												
Maryland & DC																												
Massachusetts																												
Michigan																												
Minnesota																												
Mississippi																												
Missouri																												
Montana																												
Nebraska																												
Nevada																												
New Hampshire																												
New Jersey																												
New Mexico																												
New York																												
North Carolina																												
North Dakota																												
Ohio																												
Oklahoma																												
Oregon																												
Pacific																												
Pennsylvania																												
Puerto Rico																												
Rhode Island																												
South Carolina																												
South Dakota																												
Tennessee																												
Texas																												
Utah																												
Vermont																												
Virgin Islands																												
Washington																												
West Virginia																												
Wisconsin																												
Wyoming																												



## Average monthly values

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# RAWINSONDE DATA

Average monthly values

FEBRUARY 1980

CENTREVILLE, AL 1004 MB										CHARLESTON, SC 1018 MB										CHATHAM, MA 1012 MB										CHIHUAHUA, MEXICO 859 MB									
Standard pressure surface mb										Standard pressure surface mb										Standard pressure surface mb										Standard pressure surface mb									
No. of observations										No. of observations										No. of observations										No. of observations									
Dynamic height meters										Dynamic height meters										Dynamic height meters										Dynamic height meters									
Temperature °C										Temperature °C										Temperature °C										Temperature °C									
Dew Point °C										Dew Point °C										Dew Point °C										Dew Point °C									
Direction tens of deg.										Direction tens of deg.										Direction tens of deg.										Direction tens of deg.									
Speed m.p.h.										Speed m.p.h.										Speed m.p.h.										Speed m.p.h.									
Resultant Wind										Resultant Wind										Resultant Wind										Resultant Wind									
No. of observations										No. of observations										No. of observations										No. of observations									
Dynamic height meters										Dynamic height meters										Dynamic height meters										Dynamic height meters									
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Dew Point °C										Dew Point °C										Dew Point °C										Dew Point °C									
Direction tens of deg.										Direction tens of deg.										Direction tens of deg.										Direction tens of deg.									
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Direction tens of deg.										Direction tens of deg.										Direction tens of deg.										Direction tens of deg.									
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Dew Point °C										Dew Point °C										Dew Point °C										Dew Point °C									
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Temperature °C										Temperature °C										Temperature °C										Temperature °C									
Dew Point °C										Dew Point °C										Dew Point °C										Dew Point °C									
Direction tens of deg.										Direction tens of deg.										Direction tens of deg.										Direction tens of deg.									
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# RAWINSONDE DATA

Average monthly values

FEBRUARY 1980

FLINT, MI 990 MB										GLASSBORO, NJ 936 MB										GRAND JUNCTION, CO 853 MB										GREAT FALLS, MT 887 MB										GREEN BAY, WI 994 MB																																										
Standard pressure surface mb	No of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Resultant Wind Speed mps	No of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Resultant Wind Speed mps	No of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Resultant Wind Speed mps	No of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Resultant Wind Speed mps	No of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Resultant Wind Speed mps	No of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Resultant Wind Speed mps																																														
SFC	29	236	-8.5	-11.2	27	1.1	29	696	-10.4	-12.4	09	2.0	29	1,472	.6	-3.2	12	1.7	29	1,118	-3.9	-8.7	72	2.5	29	210	-10.4	-12.8	33	1.7	29	210	-10.4	-12.8	33	1.7																																														
1000	29	559	-8.7	-11.1	30	3.3	29	999	-6.8	-9.8	31	1.8	29	1,542	-4.4	-6.7	12	2.5	29	1,460	-1.1	-7.8	76	5.3	29	245	-11.4	-15.7	30	1.0	29	245	-11.4	-15.7	30	1.0																																														
950	29	977	-10.2	-12.8	30	8.2	29	999	-6.8	-9.8	31	1.8	29	1,988	-5.6	-16.1	1.7	29	1,943	-2.7	-9.5	98	5.6	29	560	-9.8	-12.9	33	1.0	29	560	-9.8	-12.9	33	1.0																																															
900	29	1,416	-12.8	-15.3	30	6.0	29	1,447	-5.1	-1.7	10	4.7	19	1,988	-5.6	-16.1	1.7	29	1,943	-2.7	-9.5	98	5.6	29	1,873	-13.8	-20.0	30	5.4	29	1,873	-13.8	-20.0	30	5.4																																															
850	29	1,879	-13.1	-18.9	29	7.4	29	1,924	-5.7	-14.1	31	7.5	29	2,504	-2.1	-8.2	24	29	2,452	-5.7	-11.3	10	7.1	29	2,363	-15.1	-24.2	30	7.2	29	2,363	-15.1	-24.2	30	7.2																																															
800	29	2,370	-14.6	-21.4	29	8.5	29	2,428	-7.9	-17.2	31	9.0	29	3,051	-4.3	-12.9	27	5.1	29	2,690	-8.7	-13.9	30	8.8	29	2,882	-17.5	-27.1	31	8.4	29	2,882	-17.5	-27.1	31	8.4																																														
750	29	2,860	-16.7	-25.3	29	8.6	29	2,961	-10.7	-19.0	31	10.5	29	3,632	-7.6	-16.2	27	7.1	29	3,158	-10.4	-16.9	30	10.4	29	3,434	-20.2	-29.3	30	10.2	29	3,434	-20.2	-29.3	30	10.2																																														
700	29	3,445	-19.4	-28.6	29	12.0	29	3,529	-17.2	-20.6	31	12.8	29	4,251	-11.4	-20.1	29	9.1	29	4,179	-15.7	-21.0	30	11.9	29	4,025	-22.9	-31.9	30	12.0	29	4,025	-22.9	-31.9	30	12.0																																														
650	29	4,036	-22.3	-32.3	29	14.4	29	4,135	-16.5	-24.5	31	15.1	29	4,251	-11.4	-20.1	29	9.1	29	4,179	-15.7	-21.0	30	11.9	29	4,025	-22.9	-31.9	30	12.0	29	4,025	-22.9	-31.9	30	12.0																																														
600	29	4,671	-25.7	-36.3	29	17.0	29	4,784	-20.7	-28.7	31	16.4	29	4,913	-15.8	-24.1	29	10.6	29	4,825	-19.1	-25.4	30	13.2	29	4,658	-26.4	-35.6	30	14.0	29	4,658	-26.4	-35.6	30	14.0																																														
550	29	5,356	-30.2	-39.8	29	19.9	29	5,482	-25.6	-33.1	31	17.9	29	5,624	-20.9	-29.8	29	12.6	29	5,428	-24.0	-31.9	29	14.0	29	5,341	-30.5	-39.9	30	16.8	29	5,341	-30.5	-39.9	30	16.8																																														
500	29	6,099	-34.9	-44.2	29	22.7	29	6,238	-31.0	-37.9	31	20.1	29	6,394	-26.4	-36.0	29	14.7	29	6,288	-29.8	-37.3	30	15.6	29	6,083	-35.0	-43.2	30	19.6	29	6,083	-35.0	-43.2	30	19.6																																														
450	29	6,911	-40.6	-48.8	29	25.2	29	7,063	-37.4	-42.7	31	21.1	29	7,234	-32.9	-42.0	29	16.7	29	7,116	-36.4	-40.7	29	17.9	29	6,895	-40.8	-46.4	30	21.1	29	6,895	-40.8	-46.4	30	21.1																																														
400	29	7,811	-46.8	29	26.3	29	7,973	-44.6	31	22.8	29	8,162	-40.3	31	25.4	29	8,195	-38.8	31	20.1	29	8,032	-43.4	31	20.1	29	7,795	-46.6	30	23.1	29	7,795	-46.6	30	23.1																																															
350	29	8,681	-52.4	29	28.9	29	8,906	-52.1	31	25.4	29	9,128	-48.6	31	28.7	29	9,157	-47.1	31	25.4	29	9,048	-51.6	31	28.7	29	8,801	-55.9	30	24.7	29	8,801	-55.9	30	24.7																																															
300	29	9,987	-55.3	29	29.9	29	10,148	-58.1	31	26.4	29	10,371	-55.5	31	29.0	29	10,371	-55.5	31	26.4	29	10,212	-58.7	31	23.6	29	9,967	-55.7	29	23.6	29	9,967	-55.7	29	23.6																																															
250	29	11,420	-52.8	29	29.1	29	11,548	-57.7	30	25.6	29	11,785	-56.2	30	28.2	29	11,785	-56.2	30	25.6	29	11,608	-58.8	30	22.7	29	11,394	-53.1	29	23.2	29	11,394	-53.1	29	23.2																																															
200	29	12,286	-51.9	29	28.9	29	12,396	-55.0	30	23.3	29	12,638	-54.7	30	26.1	29	12,638	-54.7	30	23.3	29	12,451	-56.4	30	21.3	29	12,256	-52.6	29	24.0	29	12,256	-52.6	29	24.0																																															
175	29	13,287	-52.4	29	28.9	29	13,383	-54.4	30	21.2	29	13,626	-54.5	30	24.2	29	13,626	-54.5	30	21.2	29	13,434	-54.7	30	20.8	29	13,252	-53.2	29	25.3	29	13,252	-53.2	29	25.3																																															
150	29	14,464	-54.2	29	28.6	29	14,551	-54.6	30	21.7	29	14,788	-56.5	30	24.7	29	14,788	-56.5	30	21.7	29	14,601	-55.2	30	20.3	29	14,424	-54.3	29	25.3	29	14,424	-54.3	29	25.3																																															
125	29	15,897	-55.3	29	27.4	29	15,975	-55.6	30	20.7	29	16,195	-59.1	30	23.7	29	16,195	-59.1	30	20.7	29	16,027	-57.7	30	18.1	29	15,851	-55.7	29	25.0	29	15,851	-55.7	29	25.0																																															
100	29	17,325	-57.1	29	25.5	29	17,393	-56.5	31	19.0	29	17,593	-60.5	31	22.6	29	17,593	-60.5	31	19.0	29	17,440	-57.0	31	18.3	29	17,267	-57.3	29	29.1	29	17,267	-57.3	29	29.1																																															
75	29	18,184	-57.6	29	22.8	29	18,240	-57.0	31	18.1	29	18,424	-60.5	31	21.4	29	18,424	-60.5	31	18.1	29	18,275	-57.1	31	16.9	29	18,110	-58.3	29	23.5	29	18,110	-58.3	29	23.5																																															
50	29	19,163	-57.1	29	21.8	29	19,214	-57.8	31	17.8	29	19,386	-59.8	31	20.4	29	19,386	-59.8	31	17.8	29	19,273	-57.3	31	15.8	29	19,089	-58.4	29	21.6	29	19,089	-58.4	29	21.6																																															
25	29	20,333	-57.3	29	18.7	29	20,363	-58.4	32	16.7	29	20,527	-59.7	32	18.6	29	20,527	-59.7	32	16.7	29	20,423	-58.2	32	15.0	29	20,235	-56.7	29	20.7	29	20,235	-56.7	29	20.7																																															
10	29	21,773	-57.8	29	16.7	29	21,781	-58.1	33	16.7	29	21,930	-59.7	33	18.7	29	21,930	-59.7	33	16.7	29	21,838	-58.2	33	15.3	29	21,656	-58.8	29	19.7	29	21,656	-58.8	29	19.7																																															
5	29	23,642	-53.6	29	10.9	29	23,668	-57.4	33	15.9	29	23,736	-58.2	33	17.4	29	23,736	-58.2	33	15.9	29	23,671	-57.2	33	14.6	29	23,458	-57.7	29	17.7	29	23,458	-57.7	29	17.7																																															
0	29	24,816	-52.9	29	12.4	29	24,825	-55.6	33	14.6	29	24,902	-56.4	33	17.4	29	24,902	-56.4	33	14.6	29	24,825	-55.6	33	13.0	29	24,623	-56.8	29	16.7	29	24,623	-56.8	29	16.7																																															
0	29	26,349	-49.7	29	20	29	26,234	-55.1	33	17.5	29	26,333	-54.1	34	5.8	29	26,333	-54.1	34	17.5	29	26,132	-54.4	34	22	29	26,049	-55.4	29	18.2	29	26,049	-55.4	29	18.2																																															
0	29	28,238	-48.3	29	17	29	28,179	-52.8	02	15.0	29	28,175	-52.5	33	7.5	29	28,175	-52.5	33	15.0	29	28,188	-55.3	33	19	29	27,901	-52.2	29	19.2	29	27,901	-52.2	29	19.2																																															
0	29	30,880	-51.9	29	8	29	30,880	-51.9	8	30,880	-51.9	8	30,900	-49.0	8	30,900	-49.0	8	30,880	-51.9	8	30,880	-51.9	8	30,696	-44.9	8	30,696	-44.9	8	30,696	-44.9	8	30,696	-44.9	8	30,696	-44.9	8	30,696	-44.9	8	30,696	-44.9	8	30,696	-44.9	8	30,696	-44.9	8	30,696	-44.9	8	30,696	-44.9	8	30,696	-44.9	8	30,696	-44.9	8	30,696	-44.9	8	30,696	-44.9	8	30,696	-44.9	8	30,696	-44.9	8	30,696	-44.9	8	30,696	-44.9	8	30,696

# RAWINSONDE DATA

Average monthly values

FEBRUARY 1980

1018 MB										KOROR, CAROLINE IS. 1008 MB										KOTZEBUE, AK 1008 MB										LAKE CHARLES, LA 1020 MB									
Standard pressure surface in		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed in m/s	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed in m/s	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed in m/s	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed in m/s	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed in m/s								
1018	29	153	17.6	14.1	03	2.4	15	-7.1	-11.6	06	2.1	30	26.8	24.0	06	1.7	29	-14.3	-17.4	08	3.2	29	5	7.5	5.6	03	1.0	168	7.8	4.4	04	1.0							
800	29	590	15.3	17.2	13.4	2.4	17	-2.2	-5.5	08	2.2	69	25.8	23.5	06	4.7	22	-10.3	-11.7	16	10	4.6	29	168	7.8	4.4	04	1.0	592	8.0	1.7	24	1.0						
600	29	1,038	14.5	11.0	02	2.1	380	-5.5	-8.8	09	4.0	55	22.6	20.8	06	8.9	29	4.59	-10.8	16	11	6.6	29	592	8.0	1.7	24	1.0	1,039	8.2	-3.7	28	4.0						
400	29	1,432	12.8	8.7	27	2.1	804	-5.5	-10.5	12	4.4	1,021	20.0	17.0	07	9.8	29	1.74	-11.1	17	12	8.5	29	1,039	8.2	-3.7	28	4.0	1,432	10.8	-7.2	29	5.0						
200	29	1,788	10.8	5.8	26	6.7	1,154	-6.5	-14.1	15	7.0	1,513	17.5	13.1	07	8.1	29	1.87	-11.3	19	13	6.6	29	1,510	7.2	-7.2	29	5.0	1,788	8.8	-0.6	26	7.8						
000	29	1,856	8.8	-0.6	26	7.8	2,223	-11.0	-17.5	15	8.1	2,975	12.8	3.0	08	6.5	29	2.68	-14.8	24	15	6.6	29	2,533	3.3	-11.3	29	9.8	1,856	16.1	-31.7	27	23.3						
800	29	1,933	6.8	-2.7	27	8.2	2,750	-13.5	-21.5	15	8.9	3,152	9.9	-2.2	07	5.6	29	2.87	-18.0	24	16	6.9	29	3,089	3.3	-13.5	28	12.1	1,933	6.8	-20.7	27	14.9						
600	29	1,971	4.8	-4.7	27	11.4	3,311	-16.5	-25.5	15	9.4	3,766	6.9	-6.1	08	6.4	29	3.38	-21.0	28	17	7.8	29	3,680	-3.0	-16.6	28	13.9	1,971	4.8	-18.0	27	14.9						
400	29	1,978	-1.2	-18.0	27	14.9	3,908	-20.7	-29.6	16	10.0	4,449	3.1	-9.4	08	6.7	29	4.02	-24.6	32	17	8.5	29	4,309	-6.7	-21.1	28	16.1	1,978	-1.2	-20.7	27	16.9						
200	29	1,984	-5.4	-20.7	27	16.9	4,457	-24.8	-34.1	17	11.1	5,119	3.1	-13.3	09	6.0	29	4.55	-28.9	37	18	9.0	29	4,981	-10.8	-25.9	27	19.5	1,984	-5.4	-20.7	27	16.9						
000	29	1,989	-10.7	-26.9	27	19.7	5,216	-28.9	-38.1	16	11.0	5,875	-5.0	-16.8	09	6.3	29	5.22	-33.5	41	18	10.4	29	5,709	-15.4	-28.4	27	23.3	1,989	-10.7	-26.9	27	19.7						
800	29	1,993	-16.1	-31.7	27	23.3	5,982	-34.2	-41.9	17	11.4	6,697	-9.4	-20.5	09	6.4	29	5.91	-38.6	44	19	11.5	29	6,497	-20.6	-32.8	27	25.9	1,993	-16.1	-31.7	27	23.3						
600	29	1,995	-21.9	-37.7	27	27.1	6,796	-39.4	-46.6	17	10.7	7,595	-14.8	-28.1	10	6.0	29	6.75	-44.5	48	17	12.7	29	7,358	-27.0	-38.0	27	29.8	1,995	-21.9	-37.7	27	27.1						
400	29	1,995	-28.0	-44.4	27	31.7	7,700	-47.1	-52.4	17	12.2	8,599	-21.5	-34.6	09	6.1	29	7.45	-50.2	52	19	13.7	29	8,309	-34.1	-44.4	27	35.2	1,995	-28.0	-44.4	27	31.7						
200	29	1,995	-35.0	-51.9	27	36.4	8,707	-52.4	-57.4	17	14.2	9,608	-40.3	-52.1	12	6.2	29	8.37	-55.1	56	20	15.5	29	9,367	-42.2	-49.4	26	38.6	1,995	-35.0	-51.9	27	36.4						
000	29	1,995	-42.0	-59.4	27	41.1	9,714	-59.4	-64.4	17	16.2	10,524	-53.0	-65.1	12	13.4	28	11.20	-64.5	60	21	14.4	29	10,288	-53.1	-60.4	26	52.2	1,995	-42.0	-59.4	27	41.1						
800	29	1,995	-49.0	-66.9	27	46.1	10,721	-66.9	-71.9	17	18.2	11,531	-60.1	-71.9	12	16.7	28	12.06	-71.9	64	21	14.3	29	12,085	-55.2	-62.4	26	50.5	1,995	-49.0	-66.9	27	46.1						
600	29	1,995	-56.0	-74.4	27	51.1	11,728	-74.4	-79.4	17	20.2	12,531	-68.0	-80.1	12	21.5	28	13.06	-79.4	68	22	14.1	29	13,861	-59.0	-66.4	26	48.8	1,995	-56.0	-74.4	27	51.1						
400	29	1,995	-63.0	-81.9	27	56.1	12,735	-81.9	-86.9	17	22.2	13,531	-75.4	-86.9	12	23.8	28	14.24	-86.9	72	23	15.1	29	14,990	-64.2	-71.4	26	38.9	1,995	-63.0	-81.9	27	56.1						
200	29	1,995	-70.0	-89.4	27	61.1	13,742	-89.4	-94.4	17	24.2	14,531	-80.1	-94.4	12	25.1	29	15.42	-94.4	76	24	16.2	29	16,018	-69.4	-76.4	26	30.3	1,995	-70.0	-89.4	27	61.1						
000	29	1,995	-77.0	-96.9	27	66.1	14,749	-96.9	-101.9	17	26.2	15,331	-87.7	-101.9	12	26.8	29	16.60	-101.9	80	24	17.3	29	17,677	-69.0	-76.4	26	21.6	1,995	-77.0	-96.9	27	66.1						
800	29	1,995	-84.0	-104.4	27	71.1	15,756	-104.4	-109.4	17	28.2	16,152	-95.0	-109.4	12	28.4	29	17.78	-109.4	84	25	18.8	29	18,479	-67.3	-74.4	26	15.7	1,995	-84.0	-104.4	27	71.1						
600	29	1,995	-91.0	-111.9	27	76.1	16,763	-111.9	-116.9	17	30.2	17,152	-106.1	-116.9	12	30.6	29	18.96	-116.9	88	26	19.9	29	19,806	-66.2	-73.4	26	12.1	1,995	-91.0	-111.9	27	76.1						
400	29	1,995	-98.0	-119.4	27	81.1	17,769	-119.4	-124.4	17	32.2	18,152	-117.3	-124.4	12	31.0	29	20.14	-124.4	92	26	21.0	29	20,918	-65.1	-72.4	26	10.2	1,995	-98.0	-119.4	27	81.1						
200	29	1,995	-105.0	-126.9	27	86.1	18,776	-126.9	-131.9	17	34.2	19,152	-124.4	-131.9	12	32.8	29	21.32	-131.9	96	26	22.1	29	22,086	-64.0	-71.4	26	8.6	1,995	-105.0	-126.9	27	86.1						
000	29	1,995	-112.0	-134.4	27	91.1	19,783	-134.4	-139.4	17	36.2	19,531	-131.9	-139.4	12	34.6	29	22.50	-139.4	100	26	23.2	29	23,196	-62.9	-69.4	26	5.7	1,995	-112.0	-134.4	27	91.1						
800	29	1,995	-119.0	-141.9	27	96.1	20,790	-141.9	-146.9	17	38.2	20,311	-139.4	-146.9	12	36.4	29	23.68	-146.9	104	26	24.3	29	24,306	-61.8	-68.4	26	4.3	1,995	-119.0	-141.9	27	96.1						
600	29	1,995	-126.0	-149.4	27	101.1	21,797	-149.4	-154.4	17	40.2	21,531	-146.9	-154.4	12	38.2	29	24.86	-154.4	108	26	25.4	29	25,418	-60.7	-67.4	26	3.3	1,995	-126.0	-149.4	27	101.1						
400	29	1,995	-133.0	-156.9	27	106.1	22,804	-156.9	-161.9	17	42.2	22,249	-154.4	-161.9	12	40.0	29	26.04	-161.9	112	26	26.5	29	26,530	-59.6	-66.4	26	2.3	1,995	-133.0	-156.9	27	106.1						
200	29	1,995	-140.0	-164.4	27	111.1	23,811	-164.4	-169.4	17	44.2	23,254	-161.9	-169.4	12	41.8	29	27.22	-169.4	116	26	27.6	29	27,542	-58.5	-65.4	26	1.3	1,995	-140.0	-164.4	27	111.1						
000	29	1,995	-147.0	-171.9	27	116.1	24,818	-171.9	-176.9	17	46.2	24,197	-169.4	-176.9	12	43.6	29	28.40	-176.9	120	26	28.9	29	28,554	-57.4	-64.4	26	0.3	1,995	-147.0	-171.9	27	116.1						
800	29	1,995	-154.0	-179.4	27	121.1	25,825	-179.4	-184.4	17	48.2	25,196	-176.9	-184.4	12	45.4	29	29.58	-184.4	124	26	29.9	29	29,666	-56.3	-63.4	26	0.3	1,995	-154.0	-179.4	27	121.1						
600	29	1,995	-161.0	-186.9	27	126.1	26,832	-186.9	-191.9	17	50.2	26,243	-184.4	-191.9	12	47.2	29	30.76	-191.9	128	26	30.3	29	30,776	-55.2	-62.4	26	0.3	1,995	-161.0	-186.9	27	126.1						
400	29	1,995	-168.0	-194.4	27	131.1	27,839	-194.4	-199.4	17	52.2	27,249	-191.9	-199.4	12	49.0	29	31.94	-199.4	132	26	31.3	29	31,888	-54.1	-61.4	26	0.3	1,995	-168.0	-194.4	27	131.1						
200	29	1,995	-175.0	-201.9	27	136.1	28,846	-201.9	-206.9	17	54.2	28,254	-199.4	-206.9	12	50.8	29	33.12	-206.9	136	26	32.7	29	33,000	-53.0	-60.4	26	0.3	1,995	-175.0	-201.9	27	136.1						
000	29	1,995	-182.0	-209.4	27	141.1	29,853	-209.4	-214.4	17	56.2	29,254	-206.9	-214.4	12	52.6	29	34.30	-214.4	140	26	33.9	29	34,112	-51.9	-57.4	26	0.3	1,995	-182.0	-209.4	27	141.1						
800	29	1,995	-189.0	-216.9	27	146.1	30,860	-216.9	-221.9	17	58.2	30,254	-214.4	-221.9	12	54.4	29	35.48	-221.9	144	26	35.1	29	35,224	-50.8	-56.4	26	0.3	1,995	-189.0	-216.9	27	146.1						
600	29	1,995	-196.0	-224.4	27	151.1	31,867	-224.4	-229.4	17	60.2	31,254	-221.9	-229.4	12	56.2	29	36.66	-229.4	148	26	36.3	29	36,336	-49.7	-55.4	26	0.3	1,995	-196.0	-224.4	27	151.1						
400	29	1,995	-203.0	-231.9	27	156.1	32,874	-231.9	-236.9	17	62.2	32,254	-229.4	-236.9	12	58.0	29	37.84	-236.9	152	26	37.5	29	37,448	-48.6	-54.4	26	0.3	1,995	-203.0	-231.9	27	156.1						
200	29	1,995	-210.0	-239.4	27	161.1	33,881	-239.4	-244.4	17	64.2	33,254	-236.9	-244.4	12	59.8	29	39.02	-244.4	156	26	38.7	29	38,560	-47.5	-53.4	26	0.3	1,995	-210.0	-239.4	27	161.1						
000	29	1,995	-217.0	-246.9	27	166.1	34,888	-246.9																															

LITTLE ROCK, AR 1010 MB										LITTLE ROCK, AR 1000 MB										LONGVIEW, TX 1006 MB										MCGRATH, AK 991 MB									
STATION	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE							
1010	29	1,557	-7.9	-11.5	26	1.1	29	36	19.9	16.4	29	1.3	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
800	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
600	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
400	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
200	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
000	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
800	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
600	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
400	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
200	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
000	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
800	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
600	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
400	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
200	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
000	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
800	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
600	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
400	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
200	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
000	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
800	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
600	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
400	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
200	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
000	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
800	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
600	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
400	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
200	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
000	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
800	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
600	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
400	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
200	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
000	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
800	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
600	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
400	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
200	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
000	29	1,557	-7.9	-11.5	26	1.1	29	124	20.7	16.4	32	1.1	29	79	2	-3.2	01	1.1	29	124	5.1	1.5	19	1.0	29	103	-12.4	-16.8	02	1.3	29	103	-12.4	-16.8	02	1.3			
800	29	1,557	-7.9	-11																																			



## Average monthly values

$$\{ \{ G_1, A \vee Y \} \vee B \}$$
[illegible]

# RAWINSONDE DATA

Average monthly values

FEBRUARY 1980

SALT LAKE CITY, UT 872 MB										SAN DIEGO, CA 1001 MB										SAN JUAN, P. R. 1016 MB											
		SALEM, IL 999 MB				SALEM, OR 1007 MB																									
Standard pressure surface mb	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Speed m.p.h.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Speed m.p.h.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Speed m.p.h.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Speed m.p.h.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Speed m.p.h.	
500	29	174	-5.7	-8.0	05	1.4	28	128	13.0	9.1	17	7.2	26	124	13.0	9.1	17	7.2	26	124	13.0	9.1	17	7.2	26	124	13.0	9.1	17	7.2	
1000	16	174	-7.9	-11.0	05	1.8	28	128	13.0	9.1	17	7.2	26	124	13.0	9.1	17	7.2	26	124	13.0	9.1	17	7.2	26	124	13.0	9.1	17	7.2	
950	29	571	-4.3	-7.4	27	3.0	29	571	14.6	9.2	03	1.2	29	571	14.6	9.2	03	1.2	29	571	14.6	9.2	03	1.2	29	571	14.6	9.2	03	1.2	
900	29	997	-4.8	-10.0	28	5.0	29	997	12.6	-5.2	24	2.6	29	997	12.6	-5.2	24	2.6	29	997	12.6	-5.2	24	2.6	29	997	12.6	-5.2	24	2.6	
850	29	1447	-5.2	-12.4	28	7.0	29	1447	9.9	-4.2	24	3.6	29	1447	9.9	-4.2	24	3.6	29	1447	9.9	-4.2	24	3.6	29	1447	9.9	-4.2	24	3.6	
800	29	1922	-6.1	-15.4	25	8.3	29	1922	7.2	-7.8	26	4.8	29	1922	7.2	-7.8	26	4.8	29	1922	7.2	-7.8	26	4.8	29	1922	7.2	-7.8	26	4.8	
750	29	2426	-7.1	-17.2	29	10.5	29	2426	5.4	-12.4	26	5.7	29	2426	5.4	-12.4	26	5.7	29	2426	5.4	-12.4	26	5.7	29	2426	5.4	-12.4	26	5.7	
700	29	2981	-7.7	-18.3	29	13.4	29	2981	4.4	-16.3	27	6.1	29	2981	4.4	-16.3	27	6.1	29	2981	4.4	-16.3	27	6.1	29	2981	4.4	-16.3	27	6.1	
650	29	3530	-12.0	-21.6	29	16.2	29	3530	3.6	-22.7	27	10.1	29	3530	3.6	-22.7	27	10.1	29	3530	3.6	-22.7	27	10.1	29	3530	3.6	-22.7	27	10.1	
600	29	4079	-15.1	-25.7	29	19.4	29	4079	2.4	-24.2	27	11.6	29	4079	2.4	-24.2	27	11.6	29	4079	2.4	-24.2	27	11.6	29	4079	2.4	-24.2	27	11.6	
550	29	4793	-18.4	-30.0	29	21.8	29	4793	1.7	-27.0	27	11.6	29	4793	1.7	-27.0	27	11.6	29	4793	1.7	-27.0	27	11.6	29	4793	1.7	-27.0	27	11.6	
500	29	5494	-24.0	-35.4	29	24.7	29	5494	1.2	-30.9	28	12.5	29	5494	1.2	-30.9	28	12.5	29	5494	1.2	-30.9	28	12.5	29	5494	1.2	-30.9	28	12.5	
450	29	6256	-29.0	-40.0	29	26.4	29	6256	1.1	-37.1	25	13.0	29	6256	1.1	-37.1	25	13.0	29	6256	1.1	-37.1	25	13.0	29	6256	1.1	-37.1	25	13.0	
400	29	7086	-35.7	-48.4	29	28.2	29	7086	1.1	-42.7	24	14.3	29	7086	1.1	-42.7	24	14.3	29	7086	1.1	-42.7	24	14.3	29	7086	1.1	-42.7	24	14.3	
350	29	8004	-42.4	-56.1	29	31.1	29	8004	1.1	-48.1	24	16.3	29	8004	1.1	-48.1	24	16.3	29	8004	1.1	-48.1	24	16.3	29	8004	1.1	-48.1	24	16.3	
300	29	9027	-49.6	-63.8	29	33.8	29	9027	1.1	-54.1	24	18.9	29	9027	1.1	-54.1	24	18.9	29	9027	1.1	-54.1	24	18.9	29	9027	1.1	-54.1	24	18.9	
250	29	10205	-54.6	-68.0	29	36.0	29	10205	1.1	-59.7	26	18.9	29	10205	1.1	-59.7	26	18.9	29	10205	1.1	-59.7	26	18.9	29	10205	1.1	-59.7	26	18.9	
200	29	11638	-53.0	-65.0	29	37.7	29	11638	1.1	-57.2	26	17.3	29	11638	1.1	-57.2	26	17.3	29	11638	1.1	-57.2	26	17.3	29	11638	1.1	-57.2	26	17.3	
175	29	12502	-52.2	-64.0	29	37.7	29	12502	1.1	-54.0	27	17.3	29	12502	1.1	-54.0	27	17.3	29	12502	1.1	-54.0	27	17.3	29	12502	1.1	-54.0	27	17.3	
150	29	13504	-53.6	-65.0	29	35.4	29	13504	1.1	-52.2	27	17.3	29	13504	1.1	-52.2	27	17.3	29	13504	1.1	-52.2	27	17.3	29	13504	1.1	-52.2	27	17.3	
125	29	14447	-55.7	-67.0	29	33.8	29	14447	1.1	-50.4	28	13.0	29	14447	1.1	-50.4	28	13.0	29	14447	1.1	-50.4	28	13.0	29	14447	1.1	-50.4	28	13.0	
100	29	16081	-57.6	-69.0	29	27.1	29	16081	1.1	-55.4	28	11.2	29	16081	1.1	-55.4	28	11.2	29	16081	1.1	-55.4	28	11.2	29	16081	1.1	-55.4	28	11.2	
80	29	17482	-59.7	-71.0	29	21.8	29	17482	1.1	-56.5	29	9.4	29	17482	1.1	-56.5	29	9.4	29	17482	1.1	-56.5	29	9.4	29	17482	1.1	-56.5	29	9.4	
70	29	18311	-59.0	-70.0	29	21.8	29	18311	1.1	-57.1	29	8.5	29	18311	1.1	-57.1	29	8.5	29	18311	1.1	-57.1	29	8.5	29	18311	1.1	-57.1	29	8.5	
60	29	19474	-59.6	-70.0	29	19.0	29	19474	1.1	-57.1	31	7.3	29	19474	1.1	-57.1	31	7.3	29	19474	1.1	-57.1	31	7.3	29	19474	1.1	-57.1	31	7.3	
50	29	20413	-59.7	-70.0	29	19.0	29	20413	1.1	-57.1	31	7.3	29	20413	1.1	-57.1	31	7.3	29	20413	1.1	-57.1	31	7.3	29	20413	1.1	-57.1	31	7.3	
40	29	21810	-58.7	-69.0	29	15.0	29	21810	1.1	-56.4	35	7.6	29	21810	1.1	-56.4	35	7.6	29	21810	1.1	-56.4	35	7.6	29	21810	1.1	-56.4	35	7.6	
30	29	23611	-57.5	-67.0	29	15.2	29	23611	1.1	-55.4	01	8.5	29	23611	1.1	-55.4	01	8.5	29	23611	1.1	-55.4	01	8.5	29	23611	1.1	-55.4	01	8.5	
20	29	24778	-55.7	-65.0	29	15.2	29	24778	1.1	-53.6	02	8.5	29	24778	1.1	-53.6	02	8.5	29	24778	1.1	-53.6	02	8.5	29	24778	1.1	-53.6	02	8.5	
10	29	26265	-51.5	-61.0	29	12.8	29	26265	1.1	-53.5	01	10.2	29	26265	1.1	-53.5	01	10.2	29	26265	1.1	-53.5	01	10.2	29	26265	1.1	-53.5	01	10.2	
5	29	28194	-47.6	-57.0	29	15.2	29	28194	1.1	-51.7	01	11.6	29	28194	1.1	-51.7	01	11.6	29	28194	1.1	-51.7	01	11.6	29	28194	1.1	-51.7	01	11.6	
0	29	30858	-42.7	-46.0	29	16.5	29	30858	1.1	-46.4	01	11.6	29	30858	1.1	-46.4	01	11.6	29	30858	1.1	-46.4	01	11.6	29	30858	1.1	-46.4	01	11.6	

SEBASTIAN, FL 992 MB										SPOKANE, WA 932 MB										TAMPA BAY, FL 1018 MB										TOPEKA, KS 988 MB										TRUK, CAROLINE IS. 1011 MB									
Standard pressure surface mb	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Speed m.p.h.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Speed m.p.h.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Speed m.p.h.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Speed m.p.h.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Speed m.p.h.																			
500	29	221	-12.5	-16.1	02	1.9	29	720	-1.1	-2.3	08	1.1	29	13	9.2	7.2	01	1.9	29	268	-5.0	-8.5	01	1.5	29	2	28.1	23.7	07	4.2																			
1000	9	549	-11.6	-22.0									29	161	11.9	6.3	01	1.7	29	578	-3.6	-6.6	32	1.5	29	9	27.1	23.3	06	5.5																			
950	29	969	-11.6	-15.2	35	1.9							29	590	10.6	3.9	30	1.3	29	578	-3.6	-6.6	32	1.5	29	552	23.5	21.0	06	8.2																			
900	29	962	-12.6	-16.6	32	4.4	29	999	.3	-2.0	15	1.5	29	1,079	9.4	-1.6	28	4.0	29	1,006	-2.9	-9.5	30	3.7	29	1,024	20.7	16.3	07	8.7																			
850	29	1,397	-14.1	-19.2	31	5.8	29	1,456	-1.9	-4.8	21	3.7	29	1,514	9.4	-5.3	28	6.8	29	1,460	-2.3	-10.2	30	6.4	29	1,517	18.2	11.6	08	7.3																			
800	29	1,856	-15.5	-20.3	31	6.7	29	1,940	-2.1	-8.3	22	4.7	29	2,015	7.6	-7.6	28	6.2	29	1,941	-3.0	-14.1	30	8.5	29	2,035	16.1	7.1	09	7.3																			
750	29	2,342	-16.9	-23.7	30	7.6	29	2,452	-1.1	-11.6	24	5.3	29	2,545	9.1	-9.1	27	10.8	29	2,583	-1.7	-15.8	30	10.2	29	2,583	15.4	-7	06	8.2																			
700	29	2,854	-19.4	-26.3	30	8.1	29	2,993	-6.7	-14.7	25	6.6	29	3,105	2.3	-12.0	27	13.1	29	2,991	-7.4	-18.7	30	12.3	29	3,162	10.8	-9	5.9																				
650	29	3,406	-22.2	-30.2	30	9.4	29	3,569	-10.1	-19.2	25	7.2	29	3,701	-1.0	-15.0	27	15.9	29	3,565	-10.4	-21.0	30	14.8	29	3,777	7.8	-4.2	09	7.8																			
600	29	3,991	-25.3	-34.1	30	10.2	29	4,181	-13.9	-23.2	26	8.2	29	4,336	-4.0	-20.3	27	18.8	29	4,177	-13.8	-24.9	30	17.0	29	4,333	4.1	-7.8	09	8.4																			
550	29	4,617	-29.2	-38.0	30	11.3	29	4,837	-18.4	-27.2	26	9.5	29	5,017	-8.3	-24.2	27	21.8	29	4,833	-18.0	-27.7	30	19.2	29	5,136	1.1	-12.5	10	7.7																			
500	29	5,292	-33.4	-42.6	30	12.1	29	5,441	-23.3	-32.0	26	10.4	29	5,744	-13.3	-29.2	27	25.2	29	5,470	-22.7	-37.3	30	20.7	29	5,894	-4.1	-15.9	10	8.0																			
450	29	6,022	-37.4	-46.5	30	13.0	29	6,194	-26.5	-36.3	26	11.6	29	6,394	-13.4	-33.2	27	28.8	29	6,108	-30.2	-39.2	30	22.8	29	6,458	-10.4	-20.2	10	8.3																			
400	29	6,830	-43.0	-48.2	30	15.6	28	7,132	-35.2	-41.2	26	13.8	29	7,410	-24.9	-38.5	27	31.4	29	7,138	-34.8	-45.2	29	24.1	29	7,623	-14.0	-26.9	10	8.9																			
350	29	7,722	-48.0			17.3	28	8,051	-42.4	-41.6	26	15.3	29	8,371	-31.6	-44.8	27	36.6	29	8,059	-42.0			29	26.4	29	8,627	-20.5	-33.5	10	9.3																		
300	29	8,723	-53.4			20.0	29	9,072	-50.5		27	17.6	29	9,443	-38.8	-50.6	27	42.1	29	9,082	-49.8			29	30.3	29	9,746	-28.9	-41.6	10	8.5																		
250	24	9,888	-56.1			29	21.7	27	10,248	-57.7	27	20.3	28	10,675	-45.6		27	46.2	29	10,258	-55.6			29	30.9	29	11,023	-29.4	-49.9	11	8.8																		
200	20	11,315	-53.3			29	22.9	27	11,652	-57.4	28	19.4	27	12,138	-52.8		26	46.8	29	11,681	-53.9			29	32.7	29	12,509	-52.2		10	10.1																		
150	20	12,176	-52.4			29	24.0	27	12,549	-55.2	28	18.7	27	12,999	-55.2		24	42.7	28	12,544	-53.6			28	32.6	29	13,360	-59.3		11	12.2																		
100	25	13,171	-53.3			29	24.9	27	13,487	-54.1	28	19.5	27	13,960	-61.6		27	37.2	28	13,534	-54.2			28	32.3	29	14,307	-67.2		11	15.1																		
125	24	14,343	-54.0			29	25.3	27	14,657	-54.3	29	16.2	27	15,075	-67.3				28	14,699	-56.3			28	29.3	29	15,385	-75.3		11	17.8																		
100	28	15,780	-54.6			29	24.6	27	16,081	-55.8	29	16.1	27	16,410	-70.3				28	16,109	-58.3			28	24.6	29	16,649	-83.3		10	18.6																		
80	28	17,604	-56.1			29	24.5	26	17,506	-56.1	31	14.5	26	17,730	-70.9				25	17,507	-60.4			29	20.2	29	17,913	-76.8		08	6.2																		
60	28	18,052	-56.6			29	23.7	24	18,355	-56.7	31	13.4	25	18,528	-68.4				23	18,130	-60.7			29	18.1	29	18,685	-75.0		08	5.2																		
40	29	19,028	-57.4			33	24	19,347	-56.7	33	12.6	25	19,594	-65.7				21	19,210	-60.1			29	19.0	29	19,700	-80.1		08	6.2																			
20	27	20,169	-58.4			28	22.6	22	20,511	-56.2	33	12.5	25	20,576	-62.5			27	3.4	21	20,441	-60.1			29	13.3	29	20,671	-67.2		09	18.3																	
40	26	21,583	-58.3			28	23.3	21	21,922	-55.9	34	13.5	25	21,960	-69.5			29	3.6	19	21,838	-59.9			30	10.7	28	22,044	-59.5		09	18.3																	
60	25	23,316	-57.4			28	22.4	20	23,761	-56.1	35	15.0	25	23,769	-57.6			04	1.3	16	23,665	-58.4			31	8.1	27	23,870	-54.2		36	1.1																	
25	24	24,578	-56.2			25	21.5	18	24,447	-54.9	35	15.5	25	24,926	-55.4			09	5.0	15	24,821	-56.6			31	6.9	26	25,052	-50.6		27	5.6																	
15	25	25,974	-64.1			27	25.1	13	26,402	-52.2	36	13.6	24	26,362	-51.2			10	7.8	10	26,315	-53.4			32	6.7	26	26,512	-48.4		26	8.4																	
15	15	27,781	-52.5			27	24.6	6	28,107	-52.1	36	15.5	22	28,107	-52.1			9	7.1	9	28,107	-50.2			29	21.5	26	28,107	-50.2		26	10.4																	
10												18	10,976	-41.7			15	5.7	10	10,856	-45.3						25	16,169	-40.7																				



## Average monthly values

FEBRUARY 1980

YAKUTAT, AK 1005 MB						YAP, CAROLINE IS. 1010 MB																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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SFC	29	12	1.0	-0.8	17	1.8	29	14	26.9	23.7	05	4.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		</

# SOLAR RADIATION INTENSITIES

Tabulated in langleys per minute on a surface normal to the direction of the sun.

FEBRUARY 1980

PALMER, ALA - BSEFVAL, RI, HI										TUCSON, AZ									
Sun's zenith distance										Sun's zenith distance									
A M					P M					A M					P M				
78.7°	75.7°	70.7°	60.0°	*	60.0°	70.7°	75.7°	78.7°		78.7°	75.7°	70.7°	60.0°	*	60.0°	70.7°	75.7°	78.7°	
Air mass										Air mass									
2.67	2.01	1.34	*	1.34	2.01	2.67	3.34			4.64	3.71	2.78	1.86	*	1.86	2.78	3.71	4.64	
1.21	1.31	1.40	1.51	1.61	1.51	1.38	1.31	1.21	1.21	1.30	1.42	1.50	1.58	1.66	1.58	1.42	1.30	1.21	1.21
1.28	1.36	1.46	1.56	1.65	1.56	1.43	1.35	1.27	1.27	1.36	1.44	1.52	1.60	1.68	1.60	1.44	1.36	1.27	1.27
1.30	1.38	1.48	1.58	1.60	1.58	1.45	1.37	1.29	1.29	1.38	1.46	1.54	1.62	1.70	1.62	1.46	1.38	1.29	1.29
1.23	1.34	1.51	1.55	1.65	1.54	1.43	1.35	1.27	1.27	1.30	1.39	1.48	1.57	1.66	1.57	1.48	1.39	1.30	1.27
1.28	1.36	1.45	1.57	1.67	1.55	1.48	1.37	1.31	1.31	1.33	1.41	1.49	1.57	1.65	1.57	1.49	1.41	1.33	1.31
1.27	1.37	1.46	1.57	1.68	1.55	1.48	1.37	1.31	1.31	1.34	1.42	1.50	1.58	1.66	1.58	1.42	1.34	1.31	1.31
1.29	1.37	1.46	1.57	1.65	1.55	1.48	1.37	1.31	1.31	1.36	1.44	1.52	1.60	1.68	1.60	1.44	1.36	1.31	1.31
1.31	1.38	1.46	1.56	1.66	1.55	1.48	1.37	1.31	1.31	1.38	1.46	1.54	1.62	1.70	1.62	1.46	1.38	1.30	1.29
1.31	1.37	1.46	1.57	1.66	1.55	1.48	1.37	1.31	1.31	1.40	1.48	1.56	1.64	1.72	1.64	1.48	1.40	1.31	1.29
1.28	1.37	1.45	1.56	1.65	1.55	1.43	1.33	1.21	1.21	1.42	1.50	1.58	1.66	1.74	1.66	1.50	1.42	1.33	1.29
1.23	1.33	1.41	1.49	1.65	1.53	1.42	1.33	1.25	1.25	1.44	1.52	1.60	1.68	1.76	1.68	1.52	1.44	1.33	1.29
1.26	1.34	1.42	1.53	1.66	1.54	1.45	1.35	1.27	1.27	1.46	1.54	1.62	1.70	1.78	1.70	1.54	1.46	1.35	1.29
1.22	1.31	1.41	1.52	1.65	1.52	1.41	1.31	1.24	1.24	1.47	1.55	1.63	1.71	1.79	1.71	1.55	1.47	1.35	1.29
1.22	1.31	1.40	1.51	1.63	1.50	1.40	1.31	1.22	1.22	1.48	1.56	1.64	1.72	1.80	1.72	1.56	1.48	1.35	1.29
1.21	1.28	1.38	1.50	1.60	1.50	1.38	1.30	1.20	1.20	1.49	1.57	1.65	1.73	1.81	1.73	1.57	1.49	1.35	1.29
1.24	1.31	1.41	1.52	1.63	1.53	1.42	1.34	1.26	1.26	1.50	1.58	1.66	1.74	1.82	1.74	1.58	1.50	1.35	1.29
1.23	1.33	1.41	1.52	1.65	1.56	1.39	1.27	1.20	1.20	1.51	1.59	1.67	1.75	1.83	1.75	1.59	1.51	1.35	1.29
1.23	1.29	1.38	1.51	1.63	1.50	1.38	1.30	1.22	1.22	1.52	1.60	1.68	1.76	1.84	1.76	1.60	1.52	1.35	1.29
1.22	1.32	1.41	1.52	1.63	1.50	1.38	1.30	1.22	1.22	1.53	1.61	1.69	1.77	1.85	1.77	1.61	1.53	1.35	1.29
1.22	1.29	1.38	1.48	1.60	1.48	1.36	1.27	1.19	1.19	1.54	1.62	1.70	1.78	1.86	1.78	1.62	1.54	1.35	1.29
1.25	1.34	1.43	1.54	1.64	1.52	1.41	1.32	1.23	1.23	1.55	1.63	1.71	1.79	1.87	1.79	1.63	1.55	1.35	1.29
1.25	1.34	1.43	1.54	1.64	1.52	1.41	1.32	1.23	1.23	1.55	1.63	1.71	1.79	1.87	1.79	1.63	1.55	1.35	1.29

## NET RADIATION

Net radiation in langleys per day (8 a.m. to 8 a.m.) at Palmer, Alaska.

Date . . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langleys . . .	-15	-1	-36	-33	-32	-31	-1	-66	-54	-57	-52	-38	-19	-21	-9	31	+27	+33	-64	-38	-40	-25	+1	-13	-11	-21	-6	+12	-14		-23	



# REFERENCE NOTES

OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES: Dates in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

- + And also on an earlier date or dates.
- D Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snowfall.

CLIMATOLOGICAL DATA - METRIC UNITS: Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

- B Number of days maximum 21.1°C. or above for Alaskan Stations.
- Y Peak Gust.
- + And also on an earlier date or dates.
- U Indicates Urban site.
- R Indicates Rural site.
- Ø Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

1 foot = 0.3048 meters  
 °F. = 9 x °C + 32  
 1 inch = 25.4 millimeters  
 1 mile per hour = 0.447 meters per second

HEATING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

COOLING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

## STORM SUMMARY:

- o Includes crop damage.
- C Crop damage.
- \* No occurrence of storms or unusual weather phenomena reported.
- @ Includes heavy sleet storm.
- # Freezing drizzle and freezing rain, commonly known as glaze.
- Ø For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.
- # No Storm Data Report received for this State.
- ◇ Report Incomplete.
- + Storm damages are placed in categories varying from 1 to 9 as follows:
  - 1 Less than \$50
  - 2 \$50 to \$500
  - 3 \$500 to \$5,000
  - 4 \$5,000 to \$50,000
  - 5 \$50,000 to \$500,000
  - 6 \$500,000 to \$5 Million
  - 7 \$5 Million to \$50 Million
  - 8 \$50 Million to \$500 Million
  - 9 \$500 Million to \$5 Billion

## RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, G.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Dew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Dew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Dew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygrometers. These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

- \* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.
- + Observations for these stations are scheduled at 0000 G.C.T.
- † Dew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Dew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Dew Point temperatures replaced Relative Humidity January 1967.

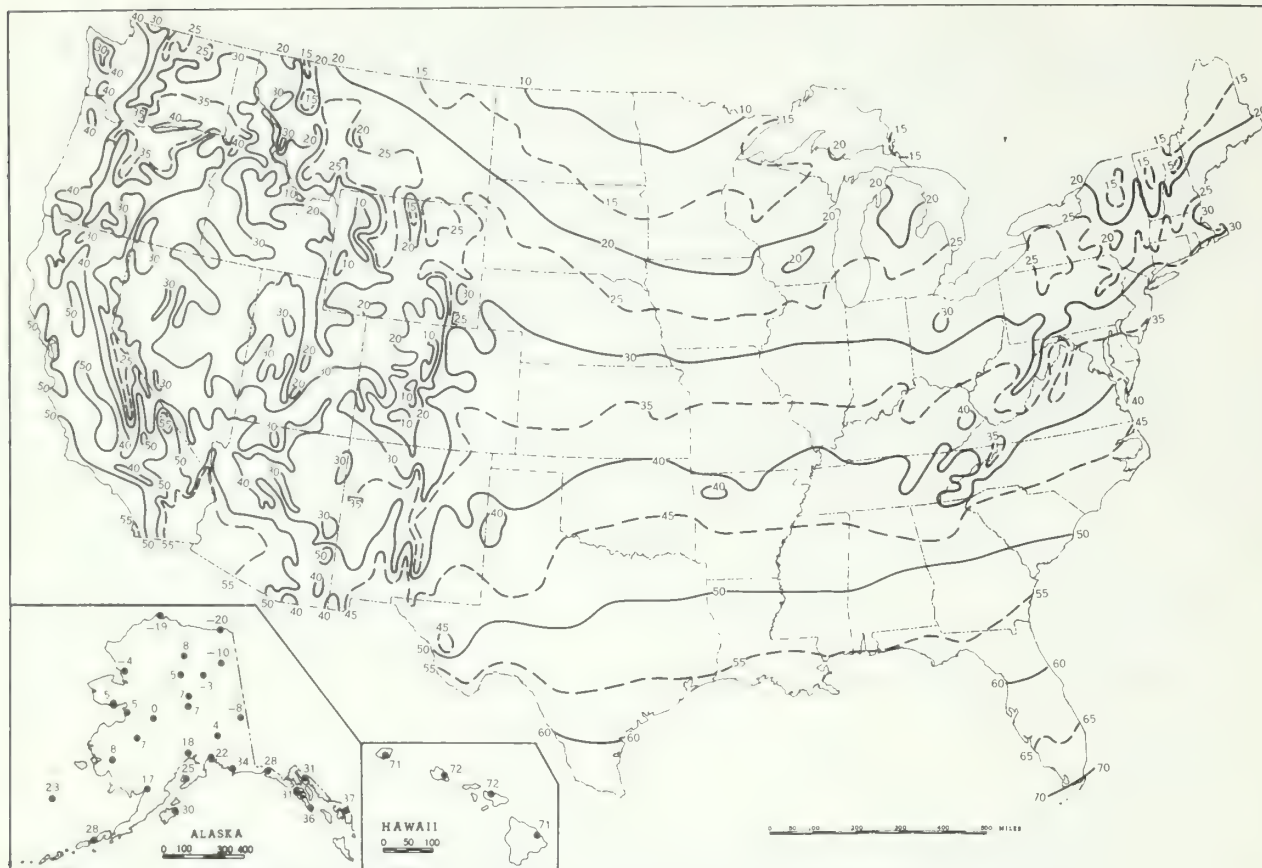
SOLAR RADIATION INTENSITIES: Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

( )	Clouds Present	DM	Moderate Dust	HM	Moderate Haze	KS	Slight Smoke
*	Values corresponding to true solar noon	DS	Slight Dust	HS	Slight Haze	M	Moderate Haze-indeter-
BD	Blowing Dust	F	Fog	I	Intense Haze-indeterminable		minable
BN	Blowing Sand	GF	Ground Fog	K	Smoke	N	Sand
D	Dust	H	Haze	KI	Intense Smoke	S	Slight Haze-indeter-
DI	Intense Dust	HI	Intense Haze	KM	Moderate Smoke		minable

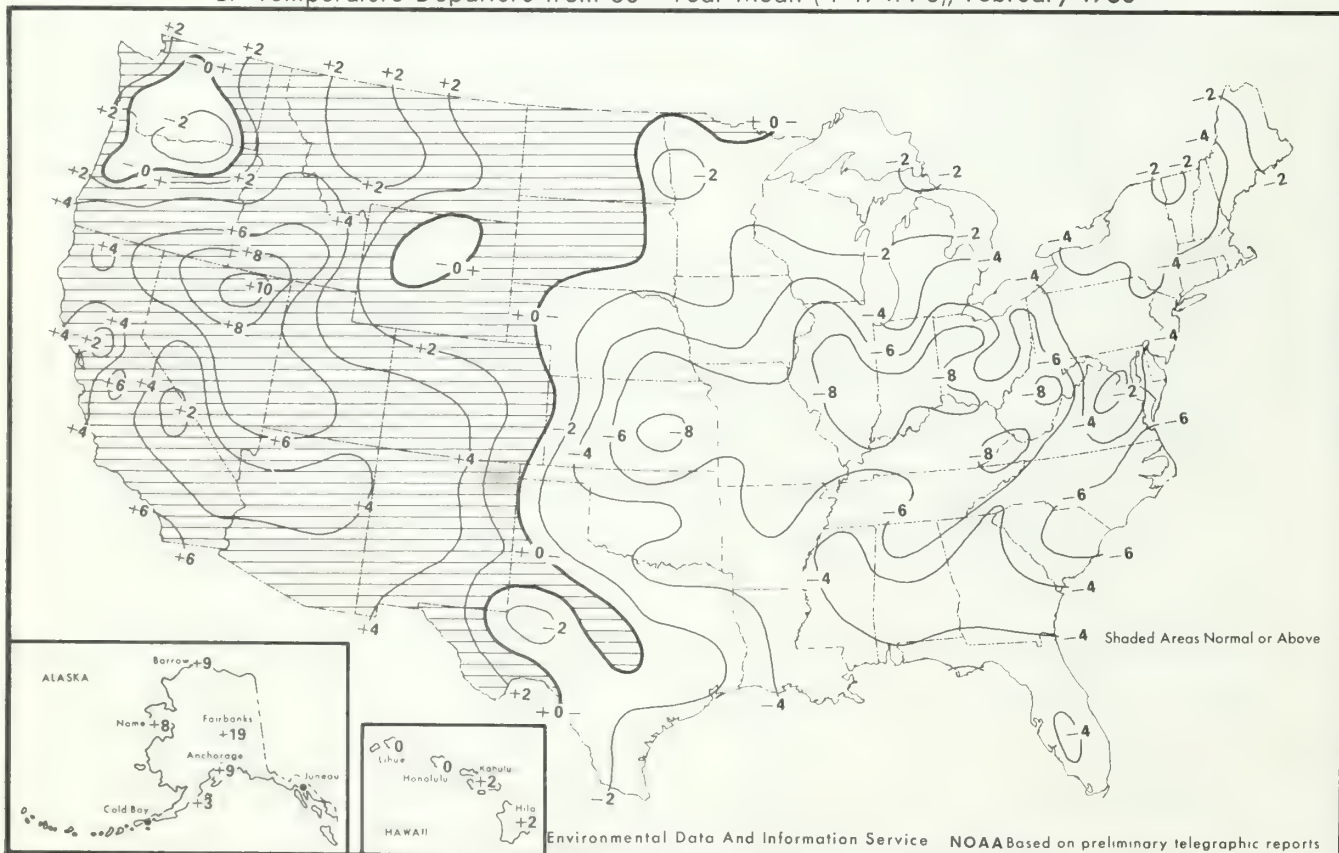
NET RADIATION: The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of sod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.

Chart 1. A. Normal Daily Average Temperature (°F. 1941-70), February.



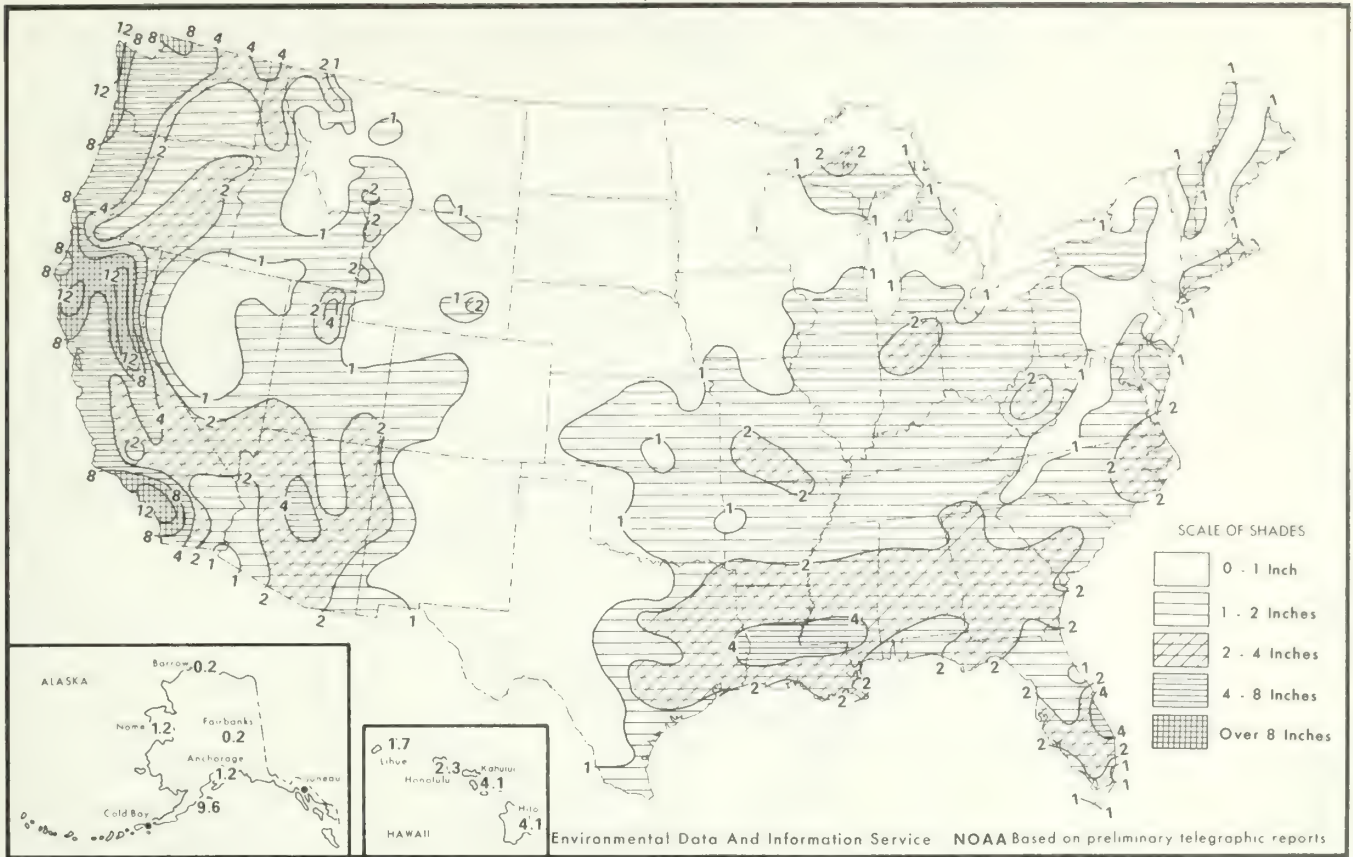
B. Temperature Departure from 30 - Year Mean (°F 1941-70), February 1980



Environmental Data And Information Service NOAA Based on preliminary telegraphic reports



Chart II. A. Total Precipitation (Inches), February 1980



B. Percentage of Normal Precipitation, February 1980

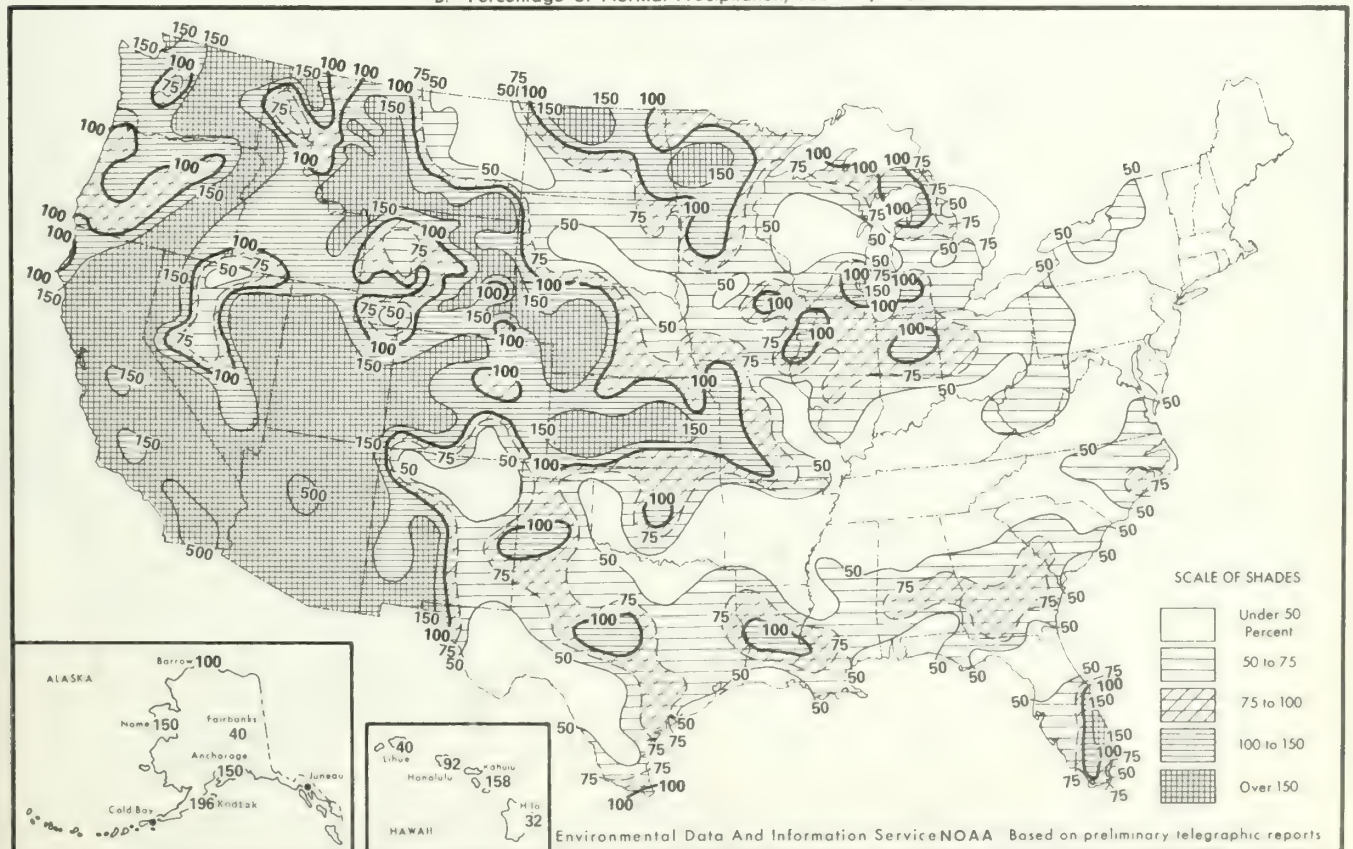
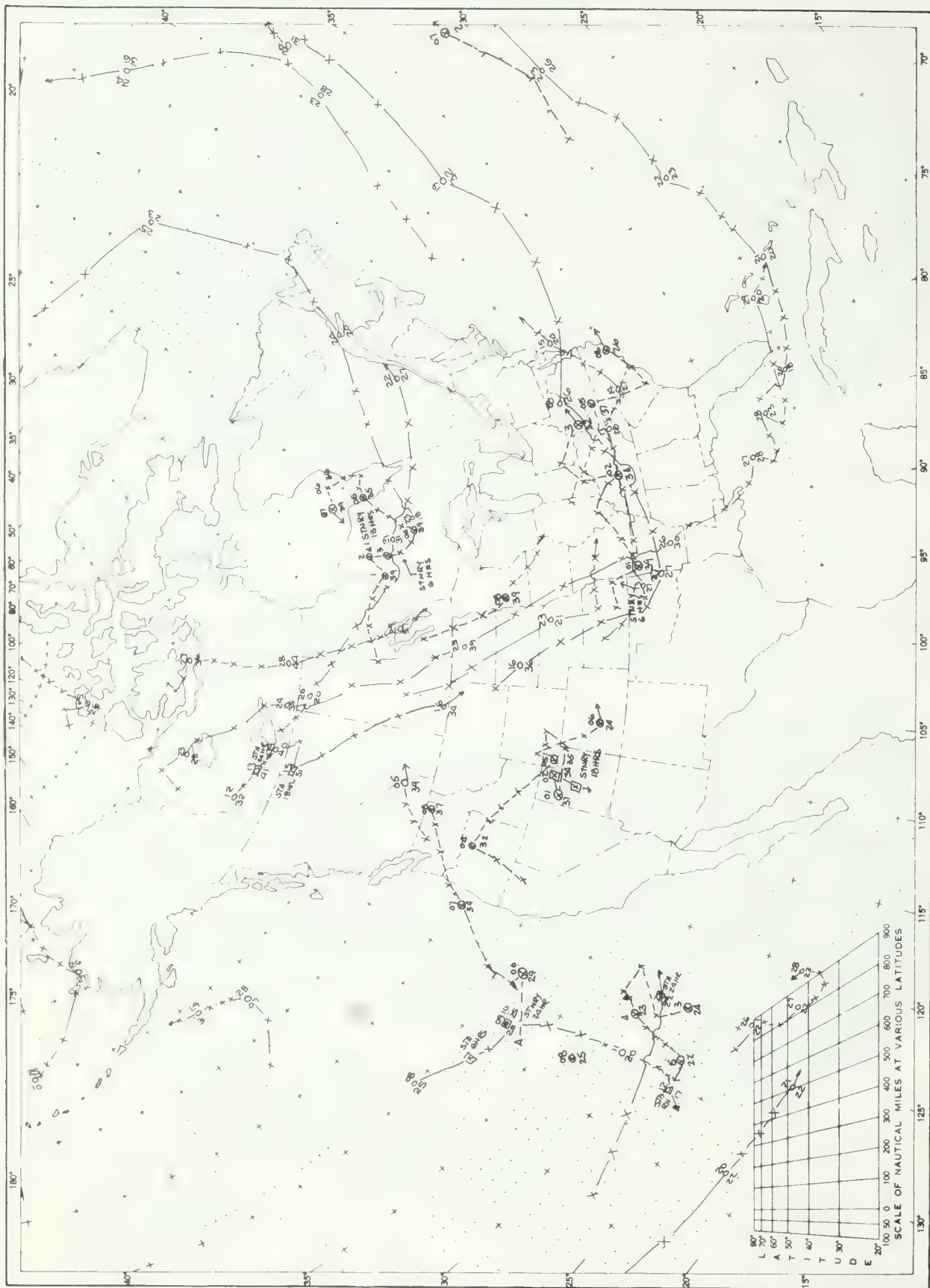


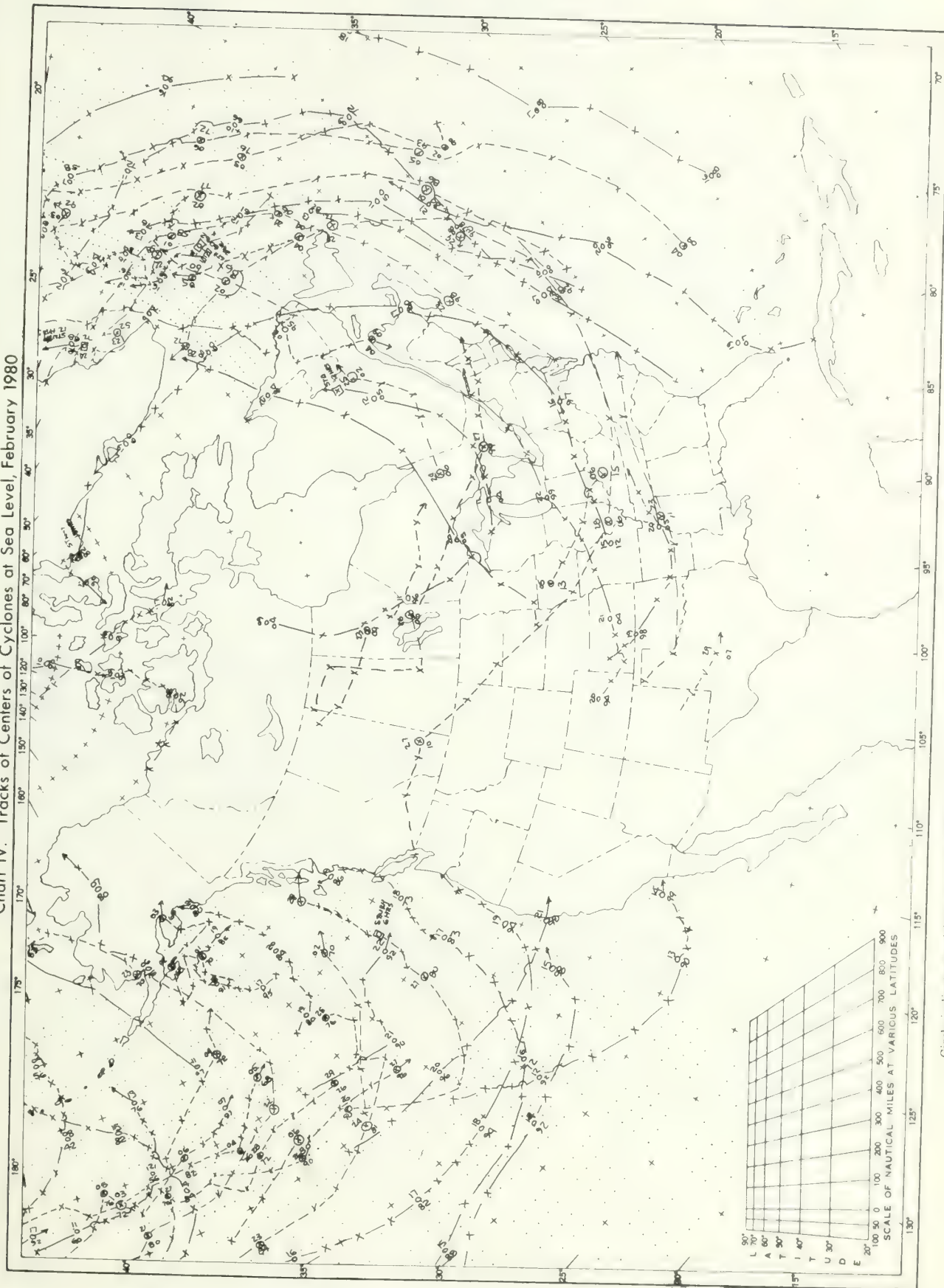
Chart III Tracks of Centers of Anticyclones at Sea Level, February 1980



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
 X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.



Chart IV. Tracks of Centers of Cyclones at Sea Level, February 1980



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
 X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
ENVIRONMENTAL DATA AND INFORMATION SERVICE  
NATIONAL CLIMATIC CENTER  
FEDERAL BUILDING  
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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

MARCH 1980

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist  
Environmental Data and Information Service, NOAA

**HIGHLIGHTS:** The dominant features of the March centered on the southeastern United States. As March began very cold air moved into the Southeast and by the third day of the month had enveloped all of Florida. Freezing temperatures reached all the way to Miami. Immediately after the freeze, rain set in and accumulated excessive amounts for each week of the month. Much of the Southeast had well over double the normal rainfall. The northern Plains, northern Mississippi Valley, and western Great Lakes areas experienced a dry month. The area from southeastern Oklahoma to southern New Mexico and southward into Mexico was also very dry.

March began cold and snowy for much of the eastern United States. On the first day, snow eased into the Midwest and spread a mantle from the southern Appalachians to the Atlantic Coast. Very cold air moved in with the storm. A record snowfall left 1 to 2 feet in southeastern Virginia and northeastern North Carolina. The morning temperature at Raleigh, NC, dipped to 11° with the cold air pushing southward. On the 3d freezing temperatures reached all the way to Miami, FL; much of the Southeast was chilled by readings in the teens.

Gradual warming took place during the succeeding week and by the 7th springlike weather prevailed in the East. Showers and thunderstorms deluged the Southeast. Elsewhere, moderate rain fell in most of California and spread eastward to the Rockies in lesser amounts.

Early in the period of the 10th-16th another cold airmass moved rapidly southward through the Plains and eastward. New England recorded light to moderate snow in the mountains and rain on the coast as the

front moved through. The cold air stalled in the South and caused another week of very heavy rain, keeping Southern farmers out of their fields. Another storm system moved into the Pacific Northwest and on to the Rockies. Rain, with snow at higher elevations, again covered the entire West. Average temperatures for the week of the 10th-16th were normal or warmer in all but the northern Mississippi Valley through New England.

The 17th-23d showed some precipitation falling in nearly all of the Nation. Exceptions included parts of the north central Plains and in southwestern Texas. Again, the area of greatest rainfall ranged from the lower Mississippi Valley through the Southeast and into New England. As much as 8 inches of rain accumulated in parts of northern Georgia and Alabama. Flooding ensued along the already swollen rivers. No severely cold temperatures were reported during the week except near the western Great Lakes, but the freeze line did reach into southwestern Texas.

March went out like a lion in parts of the Nation. Excessive rain, thunderstorms, and even tornadoes were reported from eastern Texas to the Florida Panhandle and North Carolina. It was the fourth week of excessive rain in the Southeast. A series of storms originating in the central Rockies caused near blizzard conditions in the west central Plains. Parts of western Kansas and Nebraska accumulated over 15 inches of snow. Temperatures hovering near freezing and periodic high winds compounded the problems. Again, nearly all of the Nation recorded some precipitation. Average temperatures for the week were cooler than normal in the Rockies and central Plains, warmer in the northern Plains, and near normal elsewhere.

## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

March 1980

STATE	Temperature					Precipitation				
	Monthly extremes					Monthly extremes				
	Station	Highest	Date	Station	Lowest	Date	Station	Greatest	Station	Least
		°F			°F			In.		In.
Alabama	Mobile WSO AP	89	11	Valley Head	2	3	Calera 2 SW	18.86	Frisco City 4 SSW	9.91
Alaska	2 Stations	53	31	Chandalar Lake	48	15	Little Port Walter	15.53	Lonely	7
Arizona	Casa Grande	87	2	Sunrise Mountain	-5	17	Hawley Lake	5.47	Bisbee 2	.15
Arkansas	4 Stations	82	11*	Fayetteville Exp Sta	-4	1	Eudora	11.91	Horatio	2.25
California	2 Stations	86	31*	Bodie	-14	25	Crescent City 7 ENE	12.12	Bishop WSO AP	.28
Colorado	Lamar	86	1*	Taylor Park	-38	17	Wolf Creek Pass 1 E	8.19	Creede	.34
Connecticut	Hartford-Brainard FLD	86	21	Wigwam Reservoir	-9	1	New Haven	10.65	Hartford WSO AP	5.87
Delaware	Dover 1 SW	68	8	Wilmington WSO AP	6	1	Wilmington Porter Resv	7.30	Middletown 1 WSW	4.94
Florida	rt. Myers FAA AP	94	19	Smith Creek	13	3	Lake City 2 E	15.69	Key West WSO AP	.83
Georgia	Folkston 9 SW	87	28*	Blairsville Exp Sta	-3	3	Dahlonega	19.70	Folkston 3 SW	5.78
Hawaii	Puukohola Heiau 98.1	40	11	Mauna Kea Obs 111.2	20	29*	Waiakea SCD	90.07	Waiawa 941	.24
Idaho	Grand View 2 W	49	17	Island Park Dam	-14	26	Silver City 5 W	5.20	Mav	.11
Illinois	Quincy WSO CI	71	11	2 Stations	-13	2	Fairfield Radio WFIW	6.19	Marengo	.48
Indiana	Evansville	73	15	Martinsville 2 SW	-15	2	Williams	6.03	Warsaw	2.29
Iowa	4 Stations	68	20*	2 Stations	-12	2	Fort Madison	D 3.27	Waukon	.27
Kansas	2 Stations	81	15	Sabetha Lake	-14	1	LeRoy	7.17	Richfield 1 NE	.53
Kentucky	Indianawalk 1 WSW	76	17*	2 Stations	-12	3	Blackmont	D 8.64	Calhoun Lock 2	3.96
Kentucky	2 Stations	86	17	2 Stations	11	3	Bunkie	18.43	Shreveport WSO AP	3.75
Maine	Leviston	58	24*	Rangleley	-25	3	Bar Harbor 3 NW	6.84	Clayton Lake 2	2.10
Maryland	Amberland	75	5	Milford NW	-5	2	Catoctin Mountain Park	D 7.39	Hancock Fruit Lab	3.83
Massachusetts	Chester 2	68	26	Chester 2	-14	1	Chester 2	13.60	Nantucket FAA AP	3.85
Michigan	2 Stations	63	11*	Trout Lake	-31	1	Monroe	4.44	Fayette 3 SW	.18
Minnesota	Winona	62	29	Tower 3 S	-16	1	New London	2.67	Crookston NM Exp Sta	.34
Mississippi	4 Stations	84	9*	4 Stations	7	3*	Centerville 4 ESE	17.99	Rosedale	9.49
Missouri	1 Station	78	5*	Cole Camp 9 SE	18	2	Marble Hill	6.66	Princeton 6 SW	1.73
Montana	Ballantine	67	14	Stimpson 9 NW	-33	5	Red Lodge	4.90	Bloomfield	.02
Nebraska	4 Stations	75	18*	Nemsel 20 S	-32	1	Benkelman	4.99	Tryon 6 NE	.34
Nevada	Sunrise Manr Las Vegas	78	20*	Mountain City R S	-2	17	Red Rock Canyon St Pk	2.53	Lahontan Dam	.07
New Hampshire	1 Station	62	29	Mount Washington	-60	1	MacDowell Dam	8.25	Lanaster	2.41
New Jersey	Morristown	68	8	2 Stations	0	2*	Woodcliff Lake	9.59	Shiloh	4.70
New Mexico	1 Station	84	31*	Chama	-8	17	Brazos Lodge	4.40	7 Stations	.00
New York	Aurora Research Farm	66	21	Old Forge	-36	2	Slide Mountain	14.53	Ellenburg Depot	1.74
North Carolina	2 Stations	78	22*	Graniteville Mountain	-8	3	Coveeta Exp Station	17.04	Roanoke Rapids	4.00
North Dakota	Bevin	64	18	Spivey 3 N	-38	1	Forbes 9 NW	1.12	Ambrose 3 N	.00
Ohio	Ironton	74	4	Dorset	-29	1	Waterloo	6.76	Ashtabula	2.39
Oklahoma	3 Stations	83	16	2 Stations	-2	2	Eufaula	6.08	Marietta 3 NW	.54
Oregon	Gold Beach Ranger Sta	71	9	Crater Lake NPS Hq	3	16	Port Orford 5 E	13.79	Redmond FAA AP	.18
Pennsylvania	2 Stations	77	17*	Kane 3 NNE	-23	2	Bucksville	8.17	Titusville Waterworks	2.31
Puerto Rico	2 Stations	85	24*	Adjuntas Substation	-9	1	Pico Del Este	8.86	Puerto Real	.00
Rhode Island	Providence WSO AP	63	17	North Foster 1 E	1	1	Kingston	10.06	Woonsocket	6.91
South Carolina	Ridgeland 5 NE	82	31	Simms Water Plant	-3	3	Walhalla	15.43	Andrews	D 6.48
South Dakota	3 Stations	75	11*	Usta 8 WNW	-15	1	Edgemont	2.38	Glad Valley 2 W	.1
Tennessee	2 Stations	77	3*	Uniona	-11	3	Chattanooga WSO AP	16.32	Samburg Wildlife Ref	5.40
Texas	4 Stations	87	23*	Lipscomb	2	2	Deweyville 5 S	10.49	27 Stations	.00
Texas	3 Stations	69	18*	Scofield	-16	26*	Alta	11.64	Duchesne Airport	.29
Vermont	3 Stations	62	21*	Enosburg Falls	-28	2	Searsburg Station	9.13	Enosburg Falls	1.59
Virginia	2 Stations	77	30*	Timberville 3 E	-7	3	Meadows of Dan 5 SW	7.56	Colonial Beach	2.31
Virgin Islands	Annaly	91	28	Beth Upper New Works	62	2	Caneel Bay Plantation	4.05	East Hill	.94
Washington	Nomnyside	76	2*	Chesaw 4 NNW	-1	6	Rainier Paradise R S	13.83	Wenatchee	.07
West Virginia	1 Station	78	8	Elkins WSO AP	14	3	Seneca State Forest	7.05	Moorefield 2 SSE	2.22
Wisconsin	2 Stations	79	31	3 Stations	-26	1	Madeline Island	1.63	2 Stations	.30
Wyoming	Yoder 4 SW	67	15	Double Four Ranch	-24	1	Atlantic City Ore Mine	4.24	Deaver	.02



## CLIMATOLOGICAL DATA

METRIC UNITS

NOV 1988

State and Station	Elevation (ground)	Pressure		Temperature				Precipitation				Wind				No. of days (sunrise to sunset)		Sky cover, tenths (sunrise to sunset)	%																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
		Station	Sea level	C	F	C	F	C	F	mm	in	mm	in	mm	in	mm	in			mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in

# CLIMATOLOGICAL DATA

METRIC UNITS

MARCH 1980

State and Station	Elevation (ground)	Pressure		Temperature										Precipitation					Wind			No. of days (sunrise to sunset)		Possible sunshine																	
		Station	Sea level	°C	°F	Average maximum	Average minimum	Average	Departure from normal	Highest	Lowest	Date	Max 32° or above	Min. 0° or lower	No. of days	Average dew point	Total	Departure from normal	Greatest in 24 hours	No. of days 25 mm. or more	With thunderstorms	Total	mm		Snow, ice pellets	mm	Resultant speed	Resultant direction	Speed	Direction (1.6 kilometers)	Date										
COLORADO	2297	ALAMOSA		8.3	-10.3	-1.0	-0.4	13.9	21.4	-20.6	17	0	31	17	8	11	7	160		76	1.9	21											9	12	10	5.4					
	1873	COLORADO SPRINGS		9.9	-4.6	2.1	0.2	18.3	15	-19.4	1	0	27	33	13	10	6	323		102	1.0	33	14.3		32	12								7	8	15	6.4				
	1610	DENVER		9.9	-3.3	3.3	0.3	20.0	15	-17.2	1	0	26	29	-2	10	14	0	307		152	0.4	33	15.2		NW	12								8	16	6.8				
	1478	GRAND JUNCTION		10.8	-0.9	4.9	-0.2	17.8	14	-8.9	31	0	20	45	26	12	13	0	185		51	0.6	8	19.7		30	30								6	16	6.6				
	1428	PUEBLO		13.3	-3.8	4.8	0.3	25.0	14	-15.6	1	0	27	31	14	13	6	330		152															8	15	6.4				
CONNECTICUT	2	BRIEGPORT		6.6	-1.1	2.8	-0.5	12.8	23	-14.4	1	0	14	179	90	45	15	3	160		127	2.0	32	17.4		7	22									6	10	15	6.5		
	52	HARTFORD		6.8	-3.3	1.8	-0.2	15.0	20	-16.1	1	0	22	149	52	39	17	2	150		102	1.8	33	17.0		NW	15									5	9	17	6.9		
DELAWARE	23	WILMINGTON		9.6	-0.7	4.4	-0.9	18.9	8	-14.4	1	0	15	158	63	35	16	3	130		76	1.7	31	17.4		32	18										8	6	17	6.9	
DIST. OF COLUMBIA	98	WASHINGTON DULLES		11.6	-0.6	5.5	0.1	22.8	8	-14.4	4	0	17	122	34	28	17	2	249		203	1.5	29	16.5		30	22+											5	7	19	7.2
	3	WASHINGTON NATIONAL		12.9	2.9	7.9	0.6	22.8	8	-10.0	1	0	6	128	43	32	15	0	155		152	1.4	30	18.8		NW	22											6	7	18	7.1
																																							50		
FLORIDA	6	APALACHICOLA U		20.5	11.4	16.0	0.1	24.4	31	-5.6	3	0	3	88	-31	31	12	4	1																			27			
	9	DAYTONA BEACH		24.8	13.2	19.1	1.3	31.1	20	-3.3	3	0	3	91	-24	22	10	2	0																		16				
	3	FORT MYERS		27.7	16.3	22.0	0.7	35.9	19	-0.6	3	0	3	13	13	12	5	0	0																		12				
	8	JACKSONVILLE		23.1	10.3	16.8	0.3	25.4	20	-5.0	3	0	3	17	13	12	5	0	0																		13				
	1	MIAMI WEST		26.7	13.7	20.0	0.9	27.7	30+	-9.4	3	0	3	10	-8	12	1	0	0																		16				
	2	ORLANDO		26.7	13.7	20.0	0.9	27.7	30+	-9.4	3	0	3	10	-8	12	1	0	0																		19				
	26	ORLANDO/MC COY AFB		26.8	13.7	22.1	1.1	32.2	20	-1.9	3	0	3	81	-28	61	1	1	0																		6				
	34	PENSACOLA		26.8	13.7	22.1	1.1	32.2	20	-1.9	3	0	3	81	-28	61	1	1	0																		9				
	17	TALLAHASSEE		22.5	19.6	12.1	0.3	26.6	13	-5.6	2	0	4	10.6	75	288	128	82	15	8	1																5				
	6	TAMPA		25.1	15.1	20.1	1.2	30.0	27	-1.7	3	0	2	15.6	78	283	132	95	15	5	1																	11			
	5	WEST PALM BEACH		26.2	16.2	21.2	0.2	31.7	21	-1.1	3	0	1	16.7	77	64	-20	64	2	1	0																	5			
GEORGIA	294	ATHENS		16.0	5.1	10.6	-0.4	23.9	8	-11.7	3	0	5	254	109	54	16	4	84		76	0.4	33	11.6		31	21											6			
	308	ATLANTA		17.1	5.2	11.2	0.6	25.6	8	-11.7	3	0	4	286	148	86	18	4	69		51	0.5	35	17.0		30	21											5			
	41	AUGUSTA		18.0	4.8	11.4	-0.2	25.6	30	-11.1	3	0	5	303	184	92	16	1	28		25	0.3	28	13.0		30	21											7			
	136	COLUMBUS		19.3	6.7	13.0	0.0	27.2	8	-8.9	3	0	4	284	131	53	18	5	25		25	0.1	1	10.3		31	18											6			
	108	MACON		18.7	6.5	12.6	-0.0	25.0	8	-10.0	3	0	5	302	171	93	18	5	28		25	0.4	23	13.9		54	21											7			
HAWAII	194	ROSE		15.6	3.1	9.4	-0.9	25.6	8	-12.8	3	0	7	407	251	95	20	5	5																			4			
	14	SAVANNAH		19.2	8.7	13.9	-0.7	27.2	30	-6.7	3	0	4	197	85	75	20	4	1																		8				
IDAHO	8	HAILE		25.9	18.8	22.4	0.7	28.3	6	16.7	2	0	0	1268	920	433	31	0	0																			0			
	2	HONOLULU		27.1	20.7	23.9	1.1	28.3	15	16.1	2	0	0	77	-4	30	12	0	0																		7				
	15	KAHULUI		27.3	21.1	24.2	1.9	30.0	30	16.7	2	0	0	74	2	21	22	0	0																		19				
	31	LIHUE		25.4	20.2	22.6	0.8	26.7	31+	18.3	4+	0	0	71	-47	17	25	0	0																		6				
IOWA	865	BOISE		10.7	-0.7	5.1	0.0	16.1	10	-6.1	25+	0	20	54	29	17	12	2	69		25	0.7	31	17.9		NW	15										5				
	431	LEWISTON		10.6	1.7	6.2	0.1	16.1	22	-2.2	25	0	8	31	7	8	12	0	61		51																5				
KANSAS	1358	POCATELLO		6.7	-2.1	2.3	0.4	12.8	10	-6.7	16	0	27	39	15	13	12	0	183		76	4.8	23	16.1		5	4												5		
ILLINOIS	96	CAIRO U		11.4	2.9	7.2	-1.6	21.7	10	-10.0	2	0	7	117	-3	44	13	1	23		25																	36			
	201	CHICAGO O HARE		5.1	-4.4	0.3	-1.7	15.0	20	-18.3	2	0	24	50	-14	12	16	1	295		102	0.7	34	14.3		NE	1											3			
	177	MOLINE		5.8	-4.2	0.8	-1.2	15.0	18+	-18.9	2	0	22	44	-21	12	11	1	191		76	0.7	5	15.2		NW	10										10				
	199	PEORIA		6.8	-2.8	2.0	-0.9	15.0	20	-16.1	2	0	22	70	0	19	14	3	135		127	0.4	7	13.0		NW	10											4			
	221	ROCKFORD		3.8	-6.0	-1.1	-2.2	13.3	31	-22.8	2	0	27	25	-43	7	14	0	117		76	1.0	3	14.8		31	10											3			
	179	SPRINGFIELD		7.6	-1.9	2.8	-1.3	17.8	20	-18.9	2	0	18	109	40	35	15	2	140		152	0.6	9	14.3		8	30+											4			
INDIANA	116	EVANSVILLE		9.3	-0.1	4.6	-2.2	18.9	15	-16.1	3	0	16	111	-8	26	16	0	107		102	0.1	28	12.5		NW	21+											6			
																																						45			



## CLIMATOLOGICAL DATA

METRIC UNITS

MARCH 1980

State and Station	Elevation (ground)	Pressure		Temperature				Precipitation						Wind			No. of days (sunrise to sunset)		Possible sunshine											
		Station Q	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Lowest	Date	No. of days	Max 32 °C or above	Min. 0 °C or lower	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours		Snow, ice pellets		Resultant speed	Resultant direction	Speed	Direction					
																				25 mm. or more	With thunderstorms					Maximum depth on ground				
																											No. of days	Fastest mile (1.6 kilometers)		
m	mb	mb	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	mm	mm	mm	mm	mm	mm	m/s				Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10			Sky cover, tenths (sunrise to sunset)	%
INDIANA	241	985.8	1016.7	4.1	-3.6	0.3	-2.2	12.2	-21.7	2	0	25	-5.0	6.9	106	32	29	15	4	51	178	0.4	31	13.4	NE 30	5	21	7.7	63	
	241	986.8	1016.7	6.9	-2.5	2.2	-2.1	16.1	-21.7	2	0	21	-2.8	7.0	108	13	23	16	0	91	129	0.1	25	13.0	SE 31	6	22	7.5	40	
	236	987.5	1016.2	6.3	-2.4	1.9	0.1	15.6	-15.0	1	0	19	-1.7	7.9	95	25	23	16	1	249	127	0.1	26	13.0	SE 10	2	7	22	8.2	
IOWA	286	980.4	1016.1	6.7	-3.7	1.5	0.4	18.9	-15.6	2*	0	22	-5.0	6.6	29	-29	9	7	0	147	76	1.0	4	13.0	SW 2	5	9	17	7.3	46
	322	976.6	1016.5	3.7	-6.3	-1.3	-1.4	13.9	-22.2	1	0	26	-5.6	6.6	26	-47	11	6	0	203	102	0.1	1.2	13.0	SE 10	4	13	14	6.9	60
	334	975.6	1016.5	6.7	-4.9	0.9	0.2	19.4	-17.8	1	0	28	-5.6	6.6	26	-47	11	6	0	147	51	1.2	4	14.3	NW 16*	4	13	14	6.9	60
	265	984.4	1017.3	4.4	-6.3	-0.9	-0.7	15.6	-21.7	2	0	24	-5.0	7.5	22	-35	10	6	1	201	152	0.8	3	13.9	SE 10	4	9	18	7.2	
KANSAS	448	961.1	1015.0	8.8	-2.7	3.1	-0.9	23.9	-18.9	1	0	20	-3.9	6.6	61	42	34	14	0	152	76	0.8	7	16.5	SE 16	9	7	15	6.4	57
	787	921.4	1013.4	10.5	-2.1	4.2	-0.9	25.6	-16.7	1	0	20	-2.8	6.9	73	44	35	10	3	259	203	0.5	1	21.0	SE 31	9	7	15	6.1	53
	1114	883.8	1013.1	7.9	-4.6	1.7	-0.7	21.1	-22.2	1	0	30	-3.9	7.3	70	47	31	10	2	666	381	0.7	34	18.3	SE 12	9	7	15	6.2	51
	267	983.1	1015.4	10.7	-0.9	4.9	-0.2	22.8	-19.4	2	0	14	-2.8	6.2	105	50	57	13	0	86	51	0.8	4	15.2	SW 19	8	6	17	6.7	51
MICHIGAN	403	965.8	1014.6	10.9	-0.4	5.3	-1.2	21.1	-15.6	2	0	14	-2.2	6.4	101	56	32	8	2	10	25	0.3	11	18.8	NE 23	13	3	15	5.9	60
KENTUCKY	265	984.4	1016.7	8.7	-1.5	3.6	-1.8	19.4	-23.9	3	0	20	-0.6	7.6	114	10	20	15	2	201	279	0.8	24	12.5	SE 21	5	4	22	7.6	
	294	980.4	1016.6	10.2	0.3	5.3	-1.2	21.1	-17.8	3	0	15	-1.1	6.6	153	31	39	16	4	137	102	1.1	22	12.5	SE 21	4	7	20	7.7	37
	145	999.0	1017.0	10.5	0.3	5.4	-1.2	18.3	-17.2	3	0	15	-1.1	6.7	122	-6	27	17	2	99	102	0.6	25	16.1	NW 21	5	6	20	7.6	
LOUISIANA	20	1013.9	1016.4	19.9	9.8	14.9	-0.5	26.7	-6.7	3	0	3	10.0	7.5	210	79	61	12	8	1	0	0.4	11	10.3	SE 27*	5	6	20	7.7	
	3	1014.6	1015.8	20.2	10.3	15.3	-0.4	25.6	-3.9	3*	0	3	11.7	8.1	229	131	35	14	9	0	0	0.8	12	11.6	SE 1	4	5	22	7.9	42
	1	1014.9	1015.9	21.6	11.7	16.7	0.7	28.9	-3.9	3*	0	3	11.7	7.4	256	117	83	12	1	1	0	1.1	9	10.3	SE 1	4	5	22	7.9	42
	77	1006.1	1015.3	19.0	6.4	12.7	-1.1	28.3	-6.7	3*	0	3	6.7	7.0	95	-9	18	11	7	1	1	0	0.2	14	11.6	SE 20	10	3	18	6.5
MAINE	190	989.8	1014.9	0.9	-9.8	-4.4	0.2	11.7	-23.3	3	0	30	-7.2	6.0	80	24	24	12	0	701	940	1.1	33	15.6	NW 18	10	5	16	6.2	54
	13	1012.5	1014.9	5.1	-5.2	0.0	0.1	12.2	-20.6	1	0	26	-7.2	6.0	115	24	36	12	0	133	152	1.1	33	15.6	NW 18	9	6	16	6.1	54
MARYLAND	45	1010.8	1016.5	10.6	-0.1	5.3	-0.7	21.1	-11.7	1	0	15	-2.2	6.0	139	45	41	16	2	145	127	1.5	30	18.3	NW 14	8	5	18	7.0	54
MASSACHUSETTS	192	1011.9	1014.7	6.3	-3.2	1.6	-0.2	14.4	-17.2	1	0	23	-5.0	6.2	154	40	38	13	1	119	76	1.6	31	16.1	NE 22	6	9	16	6.8	45
	5	1013.9	1014.7	6.9	-1.6	2.7	-0.7	15.0	-13.9	1	0	16	-5.0	6.2	136	35	38	15	1	91	76	1.6	31	16.1	NE 22	6	9	16	6.8	45
	301	976.3	1016.3	5.3	-4.1	0.6	-0.1	14.4	-18.3	1	0	25	-7.2	6.0	174	76	65	17	1	246	127	2.1	31	16.1	SE 15	5	11	15	6.8	54
MICHIGAN	210	990.2	1016.4	2.1	-8.7	-3.3	-0.1	14.4	-25.0	1	0	30	-7.2	7.5	31	-17	6	13	1	399	229	1.0	30	11.6	NW 21*	2	11	18	7.5	57
	189	991.2	1016.4	3.6	-3.6	0.1	-1.8	13.9	-15.0	2*	0	24	-4.4	7.4	99	36	23	14	1	297	152	0.8	27	13.0	NW 21*	2	11	18	7.5	57
	193	991.2	1016.1	4.3	-5.2	-0.4	-2.2	14.4	-18.3	2	0	25	-4.4	7.4	99	36	23	14	0	274	152	0.8	27	13.0	NW 21*	4	9	18	7.4	45
	235	987.5	1016.1	3.5	-5.8	-1.2	-1.5	15.6	-19.4	2	0	26	-5.6	7.1	56	-19	13	11	0	168	51	0.2	34	11.2	SE 21	3	10	18	7.4	45
MINNESOTA	239	986.8	1016.7	9.9	-4.4	0.3	-0.3	16.1	-20.0	2*	0	23	-3.9	7.5	44	-19	13	11	0	168	51	0.2	34	11.2	SE 21	3	10	18	7.4	45
	350	972.9	1016.5	2.1	-8.9	-3.9	-0.9	11.7	-28.3	2	0	29	-8.3	7.1	28	-16	5	13	0	307	229	0.5	32	12.5	SE 21	3	7	22	8.2	30
	256	984.1	1016.8	3.7	-6.1	-1.2	-1.7	16.7	-21.1	2	0	28	-4.4	7.9	49	-11	15	13	0	224	76	0.7	28	16.1	NW 10	2	11	18	7.6	54
	431	992.9	1016.5	-0.2	-11.8	-5.9	-0.6	10.6	-23.9	12	0	31	-5.6	7.1	14	-39	4	9	1	178	747	0.1	30	12.5	NW 10	2	11	18	7.6	54
MISSISSIPPI	191	992.9	1016.5	3.0	-4.6	-0.8	-1.2	13.9	-20.0	1	0	25	-5.6	7.1	26	-35	6	12	0	206	51	0.2	31	12.5	NW 10	3	8	22	8.4	54
	220	984.9	1016.6	-0.2	-10.3	-5.3	-0.8	12.2	-25.0	12	0	31	-5.6	7.1	29	-35	6	12	0	206	51	0.2	31	12.5	NW 14*	3	8	22	8.4	54
MISSISSIPPI	435	961.8	1017.5	-1.6	-12.1	-6.8	-2.1	6.7	-25.6	1	0	31	-11.1	7.1	26	-19	9	9	0	320	467	0.4	30	16.1	SE 15	7	8	16	6.5	63
	359	972.2	1017.4	-1.1	-15.8	-8.4	-2.1	11.7	-33.3	1	0	31	-15.0	5.8	22	-6	10	9	0	318	737	1.0	29	11.6	SE 15	7	8	16	6.5	63
	254	986.1	1017.6	2.4	-7.7	-2.6	-0.6																							

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## MARCH 1980

MARCH 1981 HJBAV

State and Station	Pressure			Temperature						Precipitation						Wind			No. of days (sunrise to sunset)	Sky cover, tenths (sunrise to sunset)													
	Elevation (ground)	Station	Sea level	Average			Departure from normal			No. of days			Total	Maximum depth on ground	Resultant speed	Resultant direction	Speed	Direction			Date												
				Average maximum	Average minimum	Average	Highest	Lowest	Date	Max. 32.2 °C or above	Min. 0 °C or lower	No. of days										Greatest in 24 hours	25 mm or more	With thunderstorms	Total								
																										Average dew point							
m	mb	mm	C	C	C	C	C	C	C	C	C	C	mm	mm	mm	m s	m s	m s															
PROVIDENCE	16	1013.2	1015.4	7.9	-2.2	2.8	0.1	17.2	17	-15.6	1	0	21	-5.6	58	206	10	87	15	1	135	76	1.6	31	14.3	11	21	7	9	15	6.9	59	Possible sunshine
SOUTH CAROLINA	12	1015.9	1017.8	18.2	6.9	12.6	-1.1	25.0	30	-9.4	3	0	4	7.2	75	203	82	96	14	2	33	25	0.4	24	13.4	10	21	7	6	18	7.1	59	
CHARLESTON U	45	1009.1	1017.4	15.3	3.6	13.6	-0.4	24.4	17	-3.6	3	0	8	5.0	75	272	154	62	15	2	102	102	0.3	29	13.0	28	21	7	6	18	6.9	57	
COLUMBIA	292	981.7	1016.8	13.9	3.4	8.7	-1.8	20.0	10	-11.7	3	0	6	1.7	66	269	153	64	13	1	91	51	0.9	1	11.2	3	28	9	4	18	6.4	55	
GRANVILLE-SPEET	395	968.2		2.0	-9.1	-3.6	-0.9	13.1	18	-27.8	1	0	30			22	-2	14	5	272	127												
ABERDEEN	390	964.5	1016.7	4.6	-7.1	-1.3	0.4	17.2	18	-23.9	1	0	30	-6.7	69	22	-7	12	9	0	216	25	0.6	6	13.9	N 16		8	4	18	6.8	74	
HURON	964	901.8	1015.1	6.2	-6.8	-0.3	0.2	18.3	15	-23.9	1	0	30	-6.1	67	22	-3	7	8	0	218	76	1.2	1	18.3	NW 12		5	10	16	7.0	61	
SIoux FALLS	432	964.1	1017.2	5.2	-5.6	-0.2	0.9	17.2	19	-20.0	1	0	26	-5.0	75	18	-18	6	10	1	147	25	0.7	5	13.0	35	16	4	12	15	6.7		
TENNESSEE	459	962.1	1017.0	12.3	0.1	6.2	-1.4	21.7	8	-18.9	3	0	17	-0.6	66	144	45	40	12	2	91	76	0.7	28	11.6	25	21	4	8	19	7.5		
BRISTOL	203	992.2	1017.0	14.2	3.3	8.8	-1.1	23.9	8	-12.8	3	0	7	1.1	64	415	272	146	19	5	10	1	0.6	32	13.0	28	21	7	7	19	7.1	44	



# CLIMATOLOGICAL DATA

METRIC UNITS

MARCH 1980

State and Station	Elevation (ground)	Pressure		Temperature										Precipitation					Wind				No. of days (sunrise to sunset)		Possible sunshine (sunrise to sunset)	%							
		Station Q	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	No. of days		Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	25 mm. or more	With thunderstorms	Total	Maximum depth on ground	Snow, ice pellets	Resultant speed			Resultant direction	Speed (1.6 kilometers)	Direction	Date	Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10
												Max 32.2 °C or above	Min. 0 °C or lower																				
WASHINGTON	122	1000.0	1016.6	10.0	3.6	6.8	0.1	16.1	1	-0.6	6	0	1	2.2	77	53	-38	11	16	0	7	0	2.4	19	13.4	S 12	2	4	25	8.5	37		
	718	929.6	1014.4	8.1	-0.8	3.7	0.6	13.3	21	-6.1	6*	0	21	-1.1	77	23	-16	8	9	0	28	Y	2.7	21	15.6	SW 14*	1	10	20	8.1	43		
	1206	876.1		1.1	-3.1	-1.0	0.1	6.1	25*	-7.8	6	0	30		236	9	29	26		2223	2946					1	1	29	9.3	32			
	289			11.2	3.2	7.2	-0.3	17.2	10	-3.3	6	0	2		49	14	14	11		94	76					2	6	23	9.3	32			
	321	976.6	1015.6	12.8	0.2	6.5	1.1	18.9	22	-3.9	15	0	17	-1.1	62	7	-7	4	6	0	43	51	2.1	27	15.6	31 29	6	6	19	7.0			
WEST INDIES																																	
	4	1014.9	1017.3	29.7	22.7	26.2	1.6	32.2	2	21.1	2	1	0	20.0	72	37	-14	9	14	0	0	0	3.2	8	11.2	E 29*	8	19	4	4.7	89		
WEST VIRGINIA																																	
	763	926.5	1017.0	8.9	-1.6	3.7	-0.9	19.4	16*	-20.6	3	0	19	-2.8	69	94	-13	20	19	3	325	356	1.4	23	15.6	30 10	4	5	22	7.9			
	310	981.4	1017.3	11.7	-0.7	5.6	-1.4	23.3	16	-17.8	3	0	17	-1.7	64	135	33	38	19	4	267	229	1.0	27	15.6	29 21	5	5	21	7.5			
	594	944.8		9.3	-4.1	2.6	-1.2	20.6	8	-25.6	3	0	22		122	22	23	20		356	254					1	7	23	8.3				
	252	986.1	1016.7	11.2	-0.2	5.5	-1.3	22.8	8	-18.9	3	0	16	-1.7	93	128	25	22	17	4	150	178	0.7	26	13.4	26 21	4	5	22	8.0			
WISCONSIN	187			9.5	-1.1	4.2	-1.8	21.1	16	-16.7	3	0	18		118	23	26	16		277	254							3	8	21	7.6	37	
	208	990.5	1017.3	1.9	-7.3	-2.7	-0.8	11.1	19*	-20.0	7	0	27	-7.2	74	25	-17	15	8	0	290	152	1.0	32	16.1	W 10	7	6	18	6.9	71		
	198	992.6	1018.1	4.2	-6.8	-1.3	-0.8	14.4	31*	-18.3	1	0	28	-5.0	78	17	-35	6	0	257	103	0.3	34	16.1	NW 10	5	7	19	7.3	42			
MADISON	262	984.8	1017.2	3.1	-7.5	-2.2	-1.2	12.8	31	-20.0	1	0	27	-7.2	70	17	-32	8	7	0	142	76	0.7	35	16.1	NW 10	5	7	19	7.3	42		
	205	990.9	1017.0	3.2	-4.9	-0.8	-0.5	13.9	20	-16.7	6	0	25	-5.6	71	20	-37	6	10	0	160	203	1.5	33	16.1	W 10	4	6	21	7.6	37		
WYOMING																																	
	1627	832.0	1012.8	5.6	-6.8	-0.6	0.0	12.8	15	-23.3	1	0	31	-6.7	67	30	7	12	13	1	439	176	3.0	23	16.5	23 13	1	5	25	8.5	48		
	1867	805.6	1011.8	6.1	-4.9	0.6	0.8	14.4	18	-21.7	1	0	28	-8.3	55	35	8	13	9	0	452	203	2.5	29	24.1	W 9	5	7	19	7.5	48		
	1696	821.6	1012.2	6.3	-5.8	0.3	0.6	13.3	14	-11.1	26	0	31	-7.8	61	38	8	21	7	0	645	305	0.5	27	10.3	24 15	3	12	16	7.3	58		
	1208	874.4	1014.5	5.7	-7.4	-0.8	-0.3	13.3	11	-18.9	5	0	31	-5.6	72	32	1	10	13	0	490	102	2.0	31	14.8	NW 19	2	8	21	7.5	60		

## HEATING DEGREE DAYS

(Base 65°F.)

MARCH 1980

State and Station	Current season			Normals	July through this month	State and Station	Current season			Normals	July through this month	State and Station	Current season			Normals	July through this month						
	This month	Period July through this month	Period July through this month				This month	Period July through this month	Period July through this month				This month	Period July through this month	Period July through this month								
ALABAMA						IDAHO						NEBRASKA						TENNESSEE					
BIRMINGHAM U	425	2871	2401			FOISE	736	4692	5004			GRAND ISLAND	946	5804	5740			BRISTOL	670	4131	3938		
BIRMINGHAM	417	2730	2708			LEWISTON	673	4425	4767			LINCOLN	912	5642	5611			CHATTANOOGA	526	3417	3289		
HUNTSVILLE	532	3413	3125			POCATELLO	888	5698	5998			NORFOLK	966	6059	6241			KNOXVILLE	529	3386	3258		
MOBILE	159	1593	1644									NORTH PLATTE	909	5584	5918			MEMPHIS	478	2980	3074		
MONTGOMERY	274	2017	2185			ILLINOIS						OMAHA (EPPLER)	987					NASHVILLE	571	3591	3475		
ALASKA						CAIRO U	616	3730	3619			OMAHA (NORTH)	945	5727	5926			OAK RIDGE	629	3880	3647		
ANCHORAGE	1164	7897	9125			CHICAGO O HARE	905	5698	5726			SCOTTSBLUFF	889	5561	5839								
ANNETTE	819	5156	5585			MOLINE	966	5965	5755			VALENTINE	1063	6303	6378			TEXAS					
BARROW	2380	14592	15905			PEORIA	907	5805	5485									ABILENE	316	2419	2495		
BARTER ISLAND	2438	14777	15759			ROCKFORD	1073	6445	6073			NEVADA						AMARILLO	649	4112	3817		
BETHEL	1382	10436	10814			SPRINGFIELD	857	5216	5051			ELKO	862	4943	6242			AUSTIN	168	1616	1693		
BETHEL	1751	12342	13598			INDIANA						ELY	983	5732	6392			BROWNSVILLE	51	642	650		
BIG DELTA	1347	12026	11793			EVANSVILLE	756	4592	4266			LAS VEGAS	328	2122	2465			CORPUS CHRISTI	74	886	930		
COLD BAY	964	7431	7529			FORT WAYNE	1001	5901	5499			RENO	813	4524	5003			DALLAS FT WORTH	339	2348	2294		
FAIRBANKS	1475	10692	12502			INDIANAPOLIS	893	5361	5020			WINNEMUCCA	827	4809	5524			DEL RIO	119	1323	1507		
GULFKANA	1397	10417	11904			SOUTH BEND	908	5321	5675									EL PASO	331	2551	2589		
HOMER	1014	7433	8275									NEW HAMPSHIRE	1022	6278	6363			GALVESTON	158	1283	1204		
JUNEAU	949	6745	7306			IOWA						CONCORD	1633	11037	11051			HOUSTON INTERCON	169	1540	1411		
KING SALMON	1157	8818	9454			DES MOINES	932	5715	6033			MT WASHINGTON OBS						LUBBOCK	436	3157	3326		
KODIAK	879	6198	6862			DUBUQUE	1096	6377	6456			NEW JERSEY						MIDLAND	384	2629	2523		
KOTZEBUE	1679	11799	12774			SIOUX CITY	966	6141	6257			ATLANTIC CITY	808	4670	4407			PORT ARTHUR	151	1517	1485		
MC GRATH	1499	11220	12399			WATERLOO	1067	6401	6619			ATLANTIC CITY U	746	4005	4063			SAN ANGELO	300	2360	2166		
NOME	1459	10627	11421									NEWARK	802	4221	4492			SAN ANTONIO	163	1446	1539		
ST. PAUL ISLAND	1030	7367	8368			KANSAS						TRENTON U	748	4330	4428			VICTORIA	135	1335	1212		
TALKEETNA	1273	9010	9801			CONCORDIA	846	5152	5070			NEW MEXICO						WACO	297	2244	2002		
UNAKLEET	1032	7532	8592			DOODGE CITY	780	4974	4566			ALBUQUERQUE	577	3661	3952			WICHITA FALLS	460	2875	2779		
YALDEZ	916	6590	7534			GOODLAND	921	5331	5359			CLAYTON	750	4527	4566			UTAH					
YAKUTAT						TOPEKA	744	4955	4783			ROSWELL	425	3277	3492			MILFORD	884	5135	5522		
ARIZONA						WICHITA	723	4518	4315									SALT LAKE CITY	723	4632	5184		
FLAGSTAFF	1009	5982	5954			KENTUCKY						NEW YORK						VERMONT					
PHOENIX	129	1065	1492			COVINGTON	814	5000	4582			ALBANY	974	5878	6053			BURLINGTON	1043	6403	6822		
TUCSON	227	1332	1671			LEXINGTON	721	4542	4313			BINGHAMTON	1022	6139	6281								
WINSLOW	678	4175	4247			LOUISVILLE	713	4292	4249			BUFFALO	1022	5744	5945			VIRGINIA					
YUMA	54	522	981									NEW YORK U	731	4069	4324			LYNCHBURG	652	3988	3888		
ARKANSAS						LOUISIANA						NEW YORK KENNEDY	823	4549	4534			NORFOLK	564	3273	3209		
FORT SMITH	531	7469	3187			BATON ROUGE	225	1854	1637			NEW YORK LA GUARDIA	764	4325	4365			RICHLAND	541	3483	3649		
LITTLE ROCK	450	2892	3194			LAKE CHARLES	194	1615	1472			ROCHESTER	1003	5907	5821			ROANOKE	656	3983	3923		
NO. LITTLE ROCK	505	3206	2952			NEW ORLEANS	154	1456	1436			SYRACUSE	1007	5760	5805			WALLOPS ISLAND	717	3729	3793		
CALIFORNIA						MAINE						NORTH CAROLINA						WASHINGTON					
BAKERSFIELD	293	1484	2023			CARTPO	1265	7794	8139			ASHEVILLE	573	3710	3844			OLYMPIA	702	4615	4488		
BISHOP	667	7749	3793			PORTLAND	1016	6244	6342			CAPE HATTERAS R	477	2621	2496			QUILLAYUTE	661	4233	4647		
BLUE CANYON	848	4326	4449									CHARLOTTE	538	3238	3039			SEATTLE	554	3623	3887		
EUREKA U	500	2810	3538			MARYLAND						GREENSBORO	565	3579	3563			SEATTLE-TACOMA	634	3923	4216		
FRESNO	343	2068	2408			HALTIMORE	723	4172	4279			RALEIGH	564	3401	3286			SPOKANE	809	5560	5797		
LONG BEACH	209	892	1364									WILMINGTON	445	2534	2329			STAMPEDE PASS R	1072	7263	7362		
LOS ANGELES	203	766	1439			MASSACHUSETTS						NORTH DAKOTA						WALLA WALLA U	613	4328	4241		
LOS ANGELES U	123	465	1036			BLUE HILL OBS R	927	5412	5449			BISMARCK	1238	7739	7923			YAKIMA	654	5231	5211		
MT SHASTA R	798	4613	4780			BOSTON	866	4877	4884			FARGO	1363	8267	8159			WEST VIRGINIA					
OAKLAND	286	1653	2332			WORCESTER	983	5842	5901			WILLISTON	1216	7654	8003			BECKLEY	809	5122	4944		
RED BLUFF	350	2045	2398									OHIO						CHARLESTON	707	4399	4180		
SACRAMENTO	408	2381	2476			MICHIGAN						AKRON	925	5576	5465			ELKINS	872	5467	5217		
SAN DIEGO	104	486	1232			ALPENA	1201	7043	7166			CINCINNATI ABBE OB	756	4697	4412			HUNTINGTON	708	4324	4205		
SAN FRANCISCO	366	2065	2421			DETROIT	1012	5933	5620			CLEVELAND	967	5587	5369			PARKERSBURG U	779	4620	4369		
SAN FRANCISCO U	275	1711	2338			FLINT	1079	6066	6097			COLUMBUS	855	5140	5095			WISCONSIN					
SANTA MARIA	378	1794	2338			GRAND RAPIDS	1000	5744	5932			DAYTON	901	5353	5049			GREEN BAY	1165	6891	7033		
STOCKTON	345	2034	2510			HOUGHTON LAKE	1233	7069	7145			MANFIELD	956	5811	5143			LA CROSSE	1085	6597	6632		
COLORADO						LANSING	1081	6231	6021			TOLEDO	1005	5862	5622			MADISON	1138	6801	6770		
ALAMOSA	1071	7254	7284			MUSKOGON	1060	6091	5919			YOUNGSTOWN	1008	5825	5607			MILWAUKEE	1063	6105	6397		
COLORADO SPRINGS	901	5480	5505			SAULT STE MARIE	1313	7820	7693			OKLAHOMA						WYOMING					
DENVER	828	5213	5158			MINNESOTA						OKLAHOMA CITY	572	3480	3479			CASPER	1048	6581	6351		
GRAND JUNCTION	740	4812	5048			DULUTH	1398	8185	8286			TULSA	513	3373	3476			CHEYENNE	984	6017	6036		
PUEBLO																							



# COOLING DEGREE DAYS

(Base 65°F.)

MARCH 1980

State and station	Current season			State and station	Current season			State and station	Current season			State and station	Current season		
	This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month
ALABAMA				HAWAII				NEBRASKA				SOUTH CAROLINA			
BIRMINGHAM U	5	8	61	HILO	234	674	553	GRAND ISLAND	0	0	0	CHARLESTON	7	16	61
BIRMINGHAM	6	10	45	HONOLULU	317	759	678	LINCOLN	0	0	0	CHARLESTON U	5	14	68
MONTVILLE	0	0	27	KAMULUI	335	854	618	NORFOLK	0	0	0	COLUMBIA	0	0	30
MOBILE	61	80	99	LINUE	258	673	583	NORTH PLATTE	0	0	0	GRNVILLE-SPRTNBRG	0	0	13
MONTGOMERY	15	24	65					OMAHA (EPPLEY)	0	0	0				
ALASKA				IDAHO				OMAHA (NORTH)	0	0	0	SOUTH DAKOTA			
ANCHORAGE	0	0	0	BOISE	0	0	0	SCOTTSDUFF	0	0	0	ABERDEEN	0	0	0
ANNETTE	0	0	0	LEWISTON	0	0	0	VALENTINE	0	0	0	HURON	0	0	0
BARROW	0	0	0	POCATELLO	0	0	0					RAPID CITY	0	0	0
BADTER ISLAND	0	0	0					NEVADA				SIOUX FALLS	0	0	0
BETHEL	0	0	0	ILLINOIS				ELKO	0	0	0				
BETTES	0	0	0	CAINO U	0	0	16	ELY	0	0	0	TENNESSEE			
BIG DELTA	0	0	0	CHICAGO O HARE	0	0	0	LAS VEGAS	0	0	14	BRISTOL	0	0	9
COLD BAY	0	0	0	MOLINE	0	0	0	RENO	0	0	0	CHATTANOOGA	0	11	18
FAIRBANKS	0	0	0	PEORIA	0	0	0	WINNEMUCCA	0	0	0	KNOXVILLE	0	0	24
GULKANA	0	0	0	ROCKFORD	0	0	0					MEMPHIS	0	0	23
HOMER	0	0	0	SPRINGFIELD	0	0	0	NEW HAMPSHIRE				NASHVILLE	0	0	19
JUNEAU	0	0	0					CONCORD	0	0	0	OAK RIDGE	0	0	12
KING SALMON	0	0	0	INDIANA				MT WASHINGTON OBS	0	0	0				
KODIAK	0	0	0	EVANSVILLE	0	0	11					TEXAS			
KOTZBUE	0	0	0	FORT WAYNE	0	0	0	NEW JERSEY				ABILENE	6	13	29
MC GRATH	0	0	0	INDIANAPOLIS	0	0	0	ATLANTIC CITY	0	0	0	AMARILLO	0	0	0
NOME	0	0	0	SOUTH BEND	0	0	0	ATLANTIC CITY U	0	0	0	AUSTIN	62	78	76
ST. PAUL ISLAND	0	0	0					NEWARK	0	0	0	BROWNSVILLE	198	343	358
TALKEETNA	0	0	0	IOWA				TRENTON U	0	0	0	CORPUS CHRISTI	159	256	199
UNALASKA	0	0	0	DES MOINES	0	0	0					DALLAS FT WORTH	11	11	25
VALDEZ	0	0	0	DUBUQUE	0	0	0	NEW MEXICO				DEL RIO	81	112	118
VAKUTAT	0	0	0	SILOUX CITY	0	0	0	ALBUQUERQUE	0	0	0	EL PASO	0	0	6
				WATERLOO	0	0	0	CLAYTON	0	0	0	GALVESTON	12	15	110
ARIZONA								ROSWELL	0	0	0	HOUSTON INTERCON	49	84	97
FLAGSTAFF	0	0	0	KANSAS								LUBBOCK	0	0	9
PHOENIX	2	7	35	CONCORDIA	0	0	0	NEW YORK				MIDLAND	0	0	17
TUCSON	1	5	24	ODDGE CITY	0	0	0	ALBANY	0	0	0	PORT ARTHUR	47	82	93
WINLOW	0	0	0	GOODLAND	0	0	0	BINGHAMTON	0	0	0	SAN ANGELO	9	9	42
YUMA	17	54	109	TOPEKA	0	0	8	BUFFALO	0	0	0	SAN ANTONIO	61	86	88
				WICHITA	0	0	6	NEW YORK U	0	0	0	VICTORIA	73	112	120
ARKANSAS								NEW YORK KENNEDY	0	0	0	WACO	25	31	44
FORT SMITH	0	0	15	KENTUCKY				NEW YORK LA GUARDIA	0	0	0	WICHITA FALLS	0	0	22
LITTLE ROCK	1	2	14	COVINGTON	0	0	0	ROCHESTER	0	0	0				
NO. LITTLE ROCK	0	0	18	LEXINGTON	0	0	10	SYRACUSE	0	0	0	UTAH			
				LOUISVILLE	0	0	10					MILFORD	0	0	0
CALIFORNIA								NORTH CAROLINA				SALT LAKE CITY	0	0	0
BAKERSFIELD	0	6	8	LOUISIANA				ASHEVILLE	0	0	0				
BISHOP	0	0	0	BATON ROUGE	40	55	85	CAPE HATTERAS R	0	0	12	VERMONT			
BLUE CANYON	0	0	0	LAKE CHARLES	31	49	104	CHARLOTTE	0	0	15	BURLINGTON	0	0	0
EUREKA U	0	2	0	NEW ORLEANS	70	93	118	GREENSBORO	0	0	11				
FRESNO	0	0	0	SHREVEPORT	6	13	47	RALEIGH	0	0	12	VIRGINIA			
LONG BEACH	0	4	7					WILMINGTON	0	1	31	LYNCHBURG	0	0	0
LOS ANGELES	0	12	12	MAINE								NORFOLK	0	0	0
LOS ANGELES U	0	67	34	CARIBOU	0	0	0	NORTH DAKOTA				RICHMOND	1	1	0
MT SHASTA R	0	0	0	PORTLAND	0	0	0	BISMARCK	0	0	0	ROANOKE	0	0	0
OAKLAND	0	0	0					FARGO	0	0	0	WALLOPS ISLAND	0	0	0
RED BLUFF	0	0	0	MARYLAND				WILLISTON	0	0	0				
SACRAMENTO	0	0	0	BALTIMORE	0	0	0					WASHINGTON			
SAN DIEGO	3	18	10					OHIO				OLYMPIA	0	0	0
SAN FRANCISCO	0	0	0	MASSACHUSETTS				AKRON	0	0	0	QUILLAYUTE	0	0	0
SAN FRANCISCO U	0	0	0	BLUE HILL OBS R	0	0	0	CINCINNATI ABBE OB	0	0	7	SEATTLE	0	0	0
SANTA MARIA	0	0	0	BOSTON	0	0	0	CLEVELAND	0	0	0	SEATTLE-TACOMA	0	0	0
STOCKTON	0	0	0	WORCESTER	0	0	0	COLUMBUS	0	0	0	SPOKANE	0	0	0
								DAYTON	0	0	0	STAMPEDE PASS R	0	0	0
COLORADO				MICHIGAN				MANSFIELD	0	0	0	WALLA WALLA U	0	0	10
ALAMOSA	0	0	0	ALPENA	0	0	0	TOLEDO	0	0	0	YAKIMA	0	0	0
COLORADO SPRINGS	0	0	0	DETROIT	0	0	0	YOUNGSTOWN	0	0	0				
DENVER	0	0	0	DETROIT METRO	0	0	0					WEST INDIES			
GRAND JUNCTION	0	0	0	FLINT	0	0	0	OKLAHOMA	0	0	11	SAN JUAN P.R.	446	1262	960
PUEBLO	0	0	0	GRAND RAPIDS	0	0	0	OKLAHOMA CITY	0	0	10				
				HOUGHTON LAKE	0	0	0	TULSA				WEST VIRGINIA			
CONNECTICUT				LANSING	0	0	0					BECKLEY	0	0	0
BRIDGEPORT	0	0	0	MUSKEGON	0	0	0	OREGON				CHARLESTON	0	0	7
HARTFORD	0	0	0	SAULT STE MARIE	0	0	0	ASTORIA	0	0	0	ELKINS	0	0	0
								BURNS U	0	0	0	HUNTINGTON	0	0	7
DELAWARE				MINNESOTA				EUGENE	0	0	0	PARKERSBURG U	0	0	0
WILMINGTON	0	0	0	DULUTH	0	0	0	MEFORD	0	0	0				
				INTERNATIONAL FALLS	0	0	0	PENDELTON	0	0	0	WISCONSIN			
DIST.OF COLUMBIA				MINNEAPOLIS	0	0	0	PORTLAND	0	0	0	GREEN BAY	0	0	0
WASHINGTON DULLES	0	0	0	ROCHESTER	0	0	0	SALEM	0	0	0	LA CROSSE	0	0	0
WASHINGTON NATIONAL	0	0	0	ST CLOUD	0	0	0	SEXTON SUMMIT R	0	0	0	MADISON	0	0	0
												MILWAUKEE	0	0	0
FLORIDA				MISSISSIPPI				PACIFIC AREA							
APPALACHICOLA U	27	35	92	JACKSON	11	22	68	GUAM TAGUAC R	397	1122	1119	WYOMING			
DAYTONA BEACH	131	164	182	MERIDIAN	10	26	68	JOHNSON	442	1219	1048	CASPER	0	0	0
FORT MYERS	252	392	353					KORD R	514	1459	1441	CHEYENNE	0	0	0
JACKSONVILLE	63	79	121	MISSOURI				KWAJALEIN	576	1605	1479	LANDER	0	0	0
KEY WEST	340	636	706	COLUMBIA REGIONAL	0	0	8	MAJURO	513	1510	1446	SHERIDAN	0	0	0
MIAMI	296	509	478	KANSAS CITY	0	0	0	PAGO PAGO	543	1545	1385				
ORLANDO	169	221	260	ST JOSEPH	0	0	0	PONAPE R	557	1676	1414				
PENSACOLA	41	63	117	ST LOUIS	0	0	9	TRUK MOEN ISLAND	527	1517	1452				
TALLAHASSEE	48	63	102	SPRINGFIELD	0	0	0	WAKE	418	1144	1102				
TAMPA	164	231	268					YAP R	503	1448	1407				
WEST PALM BEACH	218	330	394	MONTANA								PENNSYLVANIA			
				BILLINGS	0	0	0					ALLENSTOWN	0	0	0
GEORGIA				GLASGOW	0	0	0					EPIE	0	0	0
ATHENS	1	3	14	GREAT FALLS	0	0	0					HARRISBURG	0	0	0
ATLANTA	4	8	12	HAVRE	0	0	0					PHILADELPHIA	0	0	0
AUGUSTA	2	0	37	HELENA	0	0	0					PITTSBURGH	0	0	0
COLUMBUS	11	16	47	KALISPELL	0	0	0					SCRANTON	0	0	0
MACON	8	15	59	MILES CITY	0	0	0					WILLIAMSPORT	0	0	0
ROME	1	1		MISSOULA	0	0	0								
SAVANNAH	19	35	72					RHODE ISLAND							
								BLOCK ISLAND	0	0	0				
								PROVIDENCE	0	0	0				

# STORM SUMMARY

MARCH 1980

STATE	TORNADOES					HAILSTORMS				WINDSTORMS				LIGHTNING				@HEAVY SNOWSTORMS AND BLIZZARDS				# ICE STORMS				φ ALL OTHER			
	NUMBER	DAYS	DEATHS	INJURIES	↑ DAMAGE	DEATHS	INJURIES	↑ DAMAGE		DEATHS	INJURIES	↑ DAMAGE		DEATHS	INJURIES	↑ DAMAGE		DEATHS	INJURIES	↑ DAMAGE		DEATHS	INJURIES	↑ DAMAGE		DEATHS	INJURIES	↑ DAMAGE	
								PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS								
Alabama	6	3		11	5			4				4	?			4				1	?	5			1	15	5	5	3
Alaska											10	7	?			4									4		5	5	
Arkansas																													
Arizona	*																												
California									2																				
Colorado	1	1			2												5											5	
Connecticut															1													5	
Delaware																													
Florida	6	3	1	34	7									1															
Georgia	6	2		3	6			?		1		4									5				2		5	?	
Hawaii	1	1			2																			2			*6	C	
Idaho	*																												
Illinois	*																												
Indiana	*																												
Iowa																1													
Kansas																		6											
Kentucky												4																	
Louisiana	2	2			6							5				4												5	
Maine												5																3	
Maryland & DC										1	1	6																	
Massachusetts												4					4											6	
Michigan																		5											
Minnesota																	5												
Mississippi	4	2	1	1	5					2	4														2	18	6		
Missouri	*																												
Montana	*																												
Nebraska																		6											
Nevada	*											5																	
New Hampshire																													
New Jersey																												?	?
New Mexico											1	5	3																
New York												4																	
North Carolina	1	1			5							5								13	?	?	?		3		7		
North Dakota																									1				
Ohio												4																	
Oklahoma	3	2			3			?	?			5	?			?	?												
Oregon	*																												
Pacific	*																												
Pennsylvania	1	1			3			2			1	5				5			4			2						2	
Puerto Rico	*																												
Rhode Island																												4	
South Carolina	1	1		6	5													1	6	6		5	5				4	6	6
South Dakota	*																												
Tennessee	2	2		2	5			?	?			4							?	?					2	2	6	?	?
Texas	7	3			5			?	?			5	5			4											6	?	7
Utah	*																												
Vermont												5																4	
Virginia												4						2				4						3	
Virgin Islands	*																												
Washington	*																												
West Virginia												3																	
Wisconsin	*																												
Wyoming	*																												



## Average monthly values

MARCH 1985

		BOISE, ID				BOOTHVILLE, LA					BROWNSVILLE, TX				BUFFALO, NY				CAPE HATTERAS, NC														
		914 MB				1016 MB					1011 MB				990 MB				1017 MB														
SFC	31	871	1.8	-2.8	15	.8	31	1	15.3	13.0	04	-.6	30	7	18.5	15.8	13	1.8	31	218	-2.4	-6.6	24	1.2	31	149	8.6	5.5	32	1.5			
1000							31	132	16.0	12.4	15	-.6	30	102	19.1	16.0	14	1.1	5	236	-9.3	-12.1			31	141	9.8	4.4	31	2.1			
950							31	158	14.2	8.7	21	2.8	30	543	17.9	11.4	16	7.4	534	-2.7	-7.0	26	3.4	31	506	7.9	1.8	30	4.2				
900	31	991	2.8	-3.3	22	.2	31	1,025	13.5	3.1	23	5.5	30	1,006	16.8	5.1	17	8.3	972	-.5	-7.9	26	5.3	31	1,011	6.4	-1.4	29	5.9				
850	31	1,453	1.2	-5.7	29	3.1	31	1,505	11.8	-.1	25	7.9	30	1,493	16.5	-.8	19	7.3	1,421	-6.1	-11.4	28	7.1	31	1,478	10.4	-5.3	27	7.4				
800	31	1,938	-2.5	-.8	10	4.8	31	2,011	10.1	-3.5	25	10.4	30	2,007	14.9	-2.7	20	6.8	1,895	-7.7	-14.4	28	8.5	31	1,971	5.0	-.5	26	11.0				
750	31	2,447	-6.0	-10.0	8	6.1	31	2,545	7.7	-7.8	26	12.1	30	2,551	12.3	-4.2	22	7.3	2,397	-2.2	-16.9	28	10.3	31	2,492	1.7	-11.9	27	14.7				
700	31	2,984	-.9	-18.7	30	8.0	31	3,111	4.7	-10.0	26	13.3	30	3,125	8.8	-7.1	24	9.9	2,911	-10.4	-19.2	28	12.1	31	3,045	-1.2	-14.2	27	16.7				
650	31	3,553	-12.5	-20.0	30	8.6	31	3,712	1.6	-13.5	26	15.6	30	3,734	4.7	-10.5	24	10.5	3,499	-13.1	-21.5	29	13.0	31	3,632	-4.6	-17.7	27	19.8				
600	31	4,161	-16.2	-25.3	29	8.5	31	4,352	-2.6	-16.6	26	17.8	30	4,380	-.4	-13.2	25	13.4	3,105	-16.1	-25.4	28	13.5	31	4,259	-8.2	-19.8	26	21.6				
550	31	4,810	-20.6	-31.5	28	9.4	31	5,037	-3.7	-21.7	26	21.3	30	5,069	-5.1	-16.6	25	16.5	3,755	-19.8	-30.7	28	17.3	31	4,929	-12.3	-24.4	27	23.8				
500	31	5,505	-25.5	-35.0	28	9.9	31	5,773	-12.1	-26.3	26	23.8	30	5,810	-10.1	-24.1	26	19.9	3,456	-24.7	-36.1	28	20.2	31	5,651	-16.7	-26.3	27	27.2				
450	31	6,264	-31.0	-40.6	29	11.1	31	6,571	-17.1	-29.1	26	27.0	30	6,614	-15.4	-27.9	25	22.8	3,218	-26.1	-40.6	28	23.1	31	6,435	-21.8	-31.1	27	31.1				
400	31	7,089	-37.0	-46.8	29	12.4	31	7,444	-23.0	-33.6	26	31.1	30	7,493	-21.5	-33.1	26	28.1	3,404	-35.2	-45.8	27	24.2	31	7,292	-27.7	-36.6	27	35.6				
350	31	8,003	-43.4			30	13.5	31	8,412	-30.3	-39.6	26	32.5	30	8,464	-28.7	-38.9	26	31.4	3,790	-41.7	-48.6	27	25.9	31	8,242	-34.4	-41.2	27	39.9			
300	31	9,022	-50.5			30	14.5	31	9,486	-35.8	-48.0	26	36.6	29	9,548	-37.2	-46.0	26	34.1	3,8													
250	31	10,193	-57.0			30	16.2	31	10,711	-48.2		27	38.4	29	10,781	-48.7		26	36.6	31	10,180	-53.8		26	32.2	31	10,508	-50.8		28	45.3		
200	31	11,602	-56.4			29	14.8	31	12,148	-57.8		27	41.3	29	12,222	-57.2		27	38.6	31	11,613	-53.0		26	32.7	31	11,940	-56.1		28	50.5		
150	31	12,455	-53.9			26	15.1	30	12,988	-60.6		27	43.4	29	13,055	-62.9		26	37.1	31	12,475	-52.9		26	37.3	31	12,788	-56.8		28	46.9		
100	31	13,448	-53.4			29	15.8	30	13,938	-63.1		27	47.5	29	14,011	-64.6		26	34.9	31	13,465	-52.7		27	27.3	31	13,766	-57.4		27	41.6		
125	31	14,620	-54.1			29	13.4	30	15,051	-66.4		26	34.0	28	15,105	-68.4		26	30.5	31	14,645	-53.8		27	24.3	31	14,908	-60.7		27	36.1		
100	31	16,049	-55.3			28	10.7	30	16,390	-70.0		26	27.4	28	16,429	-72.7		26	22.8	30	16,075	-55.8		27	22.1	31	16,289	-63.2		27	30.1		
80	31	17,470	-56.0			29	8.6	30	17,714	-70.5		26	17.1	24	17,727	-74.4		25	16.2	30	17,491	-57.1		27	18.1	31	17,660	-63.6		27	22.0		
70	31	18,310	-56.5			30	7.2	30	18,508	-69.9		27	10.2	21	18,511	-72.4		26	11.1	29	18,333	-57.6		26	16.0	31	18,478	-63.9		27	17.2		
60	31	19,297	-56.5			31	5.6	28	19,431	-68.8		27	7.4	17	19,428	-70.2		26	5.5	29	19,359	-57.1		26	16.0	31	19,571	-64.1		27	13.1		
50	30	20,455	-56.5			34	1.5	28	20,531	-64.8		26	4.2	6	20,533	-65.1		29	1.2	29	20,458	-56.8		28	10.1	31	20,547	-62.8		28	7.4		
40	30	21,876	-55.6			31	2.4	26	21,906	-61.8		33	1.6	14	21,893	-62.9		33	1.2	28	21,872	-56.9		29	4.5	31	21,930	-61.2		30	3.5		
30	27	23,717	-54.6			36	5.5	24	23,693	-59.3		30	2.5	12	23,678	-59.9		36	3.4	28	23,701	-55.4		36	2.3	31	23,730	-58.2		31	2.0		
25	26	24,887	-54.3			36	7.2	23	24,894	-56.9		30	2.5	12	24,823	-57.7		37	5.7	27	24,862	-55.0		32	3.0	30	24,880	-57.2		30	1.4		
20	23	26,319	-53.9			37	8.9	22	26,262	-54.7		38	2.3	10	26,263	-54.4		38	2.6	27	26,290	-54.4		35	2.7	29	26,303	-55.7		34	1.8		
15	13	28,161	-53.3			37	10.8	17	28,135	-54.0		22	1.2	7	28,087	-58.0		38	2.6	27	28,141	-52.2		35	2.6	27	28,153	-52.2		32	3.3		
10																																28	4.4
7																																	
1																																	

## Average monthly values

MARCH 1980

[illegible][illegible]

DODGE CITY, KS 921 MB										EL PASO, TX 879 MB										ELY, NV 804 MB										EMPALME, MEXICO 1011 MB										FAIRBANKS, AK 992 MB									
5FC	31	791	-1.3	-3.8	14	7	31	1,193	7.1	-5.9	28	1.3	31	1,908	-3.0	-7.8	22	1.6	31	12	14.7	6.9	32	1.3	31	135	-10.8	-17.6	04	1.8																			
1000																																																	
950																																																	
900	31	976		-4.7	29	1.3																																											
850	31	1,436	2.4	-7.6	29	4.0	31	1,474	8.9	-6.4	27	3.6																																					
800	31	1,927	2.2	-10.1	29	5.5	31	1,973	5.9	-8.8	27	7.4	27	1,958	-2.6	-7.9	23	1.3	31	1,995	10.7	-10.6	25	5.0	31	1,804	-12.0	-16.8	17	3.0																			
750	31	2,446	2.4	-13.9	29	7.1	27	2,489	2.4	-10.4	26	3.1	27	2,460	-4.0	-9.8	28	1.3	31	2,530	7.9	-13.2	25	6.9	31	2,295	-15.3	-20.7	20	2.2																			
700	31	2,996	-3.2	-16.5	27	8.8	31	3,053	-5.5	-15.0	26	13.2	31	3,071	-13.5	-9.5	23	1.3	31	3,099	4.8	-15.9	26	5.1	31	2,815	-21.3	-24.2	22	2.0																			
650	31	3,578	-7.4	-19.0	27	9.7	31	3,642	-3.9	-14.9	26	15.2	31	3,575	-10.5	-17.3	30	5.4	31	3,693	4.8	-18.1	25	12.2	31	3,301	-22.6	-27.9	23	3.8																			
600	31	4,197	-11.9	-23.1	27	11.3	31	4,269	-8.1	-23.9	26	16.2	31	4,187	-14.4	-21.8	30	6.0	31	4,331	-3.7	-21.0	25	14.7	31	3,944	-26.2	-32.8	23	4.8																			
550	31	4,857	-16.4	-27.4	27	13.4	31	4,938	-12.8	-27.7	26	18.1	31	4,842	-18.2	-27.5	29	7.5	31	5,012	-8.2	-23.5	26	16.8	31	4,569	-29.7	-37.2	24	5.5																			
500	31	5,564	-21.5	-33.4	26	15.5	31	5,658	-18.2	-33.2	26	21.0	31	5,547	-23.3	-33.1	29	9.0	31	5,745	-13.3	-27.2	26	20.9	31	5,243	-34.3	-39.9	25	5.7																			
450	31	6,335	-27.2	-38.8	26	17.6	31	6,437	-23.4	-37.3	26	25.1	30	6,311	-29.0	-39.1	30	10.1	31	6,539	-18.4	-30.8	26	26.1	31	5,972	-39.8	-39.6	25	6.2																			
400	31	7,171	-34.1	-44.5	26	19.8	31	7,289	-29.7	-44.0	26	29.5	30	7,162	-34.6	-45.2	30	11.0	31	7,408	-24.3	-34.4	26	31.5	31	6,769	-49.6		25	7.2																			
350	31	8,054	-41.3	-48.0	26	22.0	31	8,232	-36.1	-47.0	26	34.2	30	8,059	-42.5		30	12.0	31	8,307	-21.0	-31.0	26	36.2	31	7,944	-50.0		25	7.8																			
300	31	8,923	-48.5		26	25.1	31	9,284	-43.6	-44.6	26	40.2	30	9,080	-49.9		29	15.8	31	9,442	-39.4	-44.9	26	41.1	31	8,655	-53.3		25	8.6																			
250	31	10,306	-54.0		26	30.4	31	10,489	-50.7		26	46.9	30	10,254	-56.2		29	16.0	31	10,667	-48.0		26	46.9	29	9,829	-52.6		25	8.2																			
200	31	11,734	-54.4		26	34.0	31	11,925	-55.4		26	46.8	30	11,672	-55.2		28	18.3	31	12,109	-56.2		26	49.2	29	11,286	-48.3		26	6.6																			
175	31	12,591	-54.1		26	32.0	31	12,776	-56.4		26	42.9	30	12,527	-55.2		28	19.4	31	12,953	-58.5		26	45.0	29	12,168	-47.1		26	6.3																			
150	31	13,578	-54.8		26	31.8	31	13,751	-58.4		26	39.8	30	13,515	-54.4		28	18.7	31	13,918	-61.0		26	40.8	29	13,191	-46.5		26	6.0																			
125	31	14,739	-57.0		26	27.1	31	14,889	-61.9		26	35.4	30	14,682	-55.0		27	17.0	31	15,041	-64.5		26	39.8	29	14,803	-46.7		26	5.8																			
100	31	16,117	-59.3		26	22.0	29	16,260	-65.5		26	27.8	30	16,099	-57.4		27	14.2	31	16,393	-68.0		26	26.3	29	16,008	-47.6		26	4.7																			
75	31	17,536	-60.6		26	16.1	26	17,614	-66.5		26	19.7	30	17,506	-58.7		27	9.4	29	17,730	-68.3		26	17.1	29	17,376	-45.3		27	4.1																			
50	31	18,367	-60.7		26	12.4	27	18,424	-65.4		26	15.2	30	18,345	-59.9		27	8.3	29	18,530	-68.4		26	14.5	29	18,268	-45.1		28	3.1																			
25	30	19,325	-61.5		26	9.7	27	19,363	-64.6		26	11.2	30	19,312	-58.9		28	5.9	27	19,547	-66.6		27	10.0	28	19,291	-45.0		30	2.6																			
0	28	20,457	-60.5		26	7.0	24	20,481	-63.2		25	6.8	29	20,459	-58.9		29	2.6	26	20,567	-64.0		27	5.5	28	20,509	-45.3		31	2.5																			
25	21	21,851	-59.9		26	5.2	21	21,858	-61.4		27	3.2	28	21,866	-57.4		0	1.1	25	21,941	-61.4		28	2.8	26	21,982	-45.7		33	1.9																			
20	22	23,660	-57.4		0	3.6	14	23,841	-57.2		0	1.9	24	23,692	-55.9		0	1.8	25	23,825	-59.2		0	2.5	27	23,851	-45.7		33	3.3																			
15	20	26,220	-55.8		0	5.2	11	26,236	-55.2		30	1.6	24	26,855	-57.2		0	7.4	22	24,992	-57.0		0	2.7	24	25,106	-45.7		30	1.9																			
10	14	28,058	-55.8		0	4.9	8	28,097	-52.1		12	12	28,130	-54.5		0	6.2	12	28,320	-54.3		0	2.5	21	28,591	-44.8		0	5.2																				



# RAWINSONDE DATA

Average monthly values

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FLINT, MI 988 MB										GRAND JUNCTION, CO 888 MB										GREAT FALLS, MT 884 MB										GREEN BAY, WI 991 MB									
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed mps	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed mps	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed mps	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed mps	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed mps									
1500	31	236	-3.8	-7.0	24	4	31	696	-6.5	-8.5	05	7	31	1,172	1.3	-3.8	12	1.5	31	1,111	-3.2	-9.1	23	2.9	31	210	-5.7	-8.1	34	1.1									
950	31	543	-3.3	-6.8	24	2.4	31	568	-1.7	-6.7	24	2.3	31	1,509	1.9	-6.2	11	1.7	31	1,428	-1.9	-9.7	24	7.2	31	539	-5.1	-8.7	34	1.6									
900	31	576	-4.4	-9.0	26	4.1	31	608	-2.8	-8.7	24	2.3	31	1,509	1.9	-6.2	11	1.7	31	1,428	-1.9	-9.7	24	7.2	31	963	-6.4	-11.6	32	2.8									
850	31	619	-5.3	-13.0	30	5.8	31	649	-3.8	-11.8	28	4.5	31	1,509	1.9	-6.2	11	1.7	31	1,410	-6.8	-16.2	30	4.3	31	1,410	-6.8	-16.2	30	4.3									
800	31	1,695	-5.5	-15.9	29	7.2	31	1,695	-6.2	-13.8	29	6.2	31	1,944	1.8	-6.8	17	2.6	31	1,883	-6.9	-19.9	20	5.6	31	1,883	-6.9	-19.9	20	5.6									
750	31	2,390	-7.3	-18.7	29	8.3	31	2,390	-7.9	-15.7	29	7.5	31	2,390	-8.6	-14.8	29	6.9	31	2,390	-8.6	-14.8	29	6.9	31	2,390	-8.6	-14.8	29	6.9									
700	31	2,935	-9.5	-22.0	29	9.8	31	2,928	-12.4	-20.7	29	8.9	31	3,001	-6.7	-12.1	25	4.6	31	2,918	-10.8	-24.4	28	8.2	31	2,918	-10.8	-24.4	28	8.2									
650	31	3,505	-12.1	-23.8	24	11.7	31	3,491	-15.3	-22.8	29	10.5	31	3,578	-10.1	-16.8	26	6.2	31	3,514	-13.7	-20.9	29	9.4	31	3,485	-13.5	-26.6	28	10.7									
600	31	4,111	-15.5	-27.9	29	13.1	31	4,092	-18.7	-26.6	29	12.2	31	4,191	-13.8	-22.1	26	8.6	31	4,118	-17.4	-23.5	28	11.6	31	4,090	-17.0	-28.8	28	12.6									
550	31	4,765	-19.8	-31.2	28	15.4	31	4,736	-22.7	-29.9	29	13.7	31	4,887	-18.0	-28.1	26	8.9	31	4,784	-21.7	-27.9	28	12.4	31	4,737	-21.2	-30.0	28	14.1									
500	31	5,467	-24.6	-35.8	28	18.2	31	5,428	-27.4	-34.8	29	15.2	31	5,552	-23.1	-32.9	26	10.9	31	5,448	-26.4	-32.7	28	13.8	31	5,414	-26.0	-33.5	27	16.7									
450	31	6,228	-29.4	-39.8	28	20.7	31	6,179	-32.6	-39.4	29	17.2	31	6,315	-28.8	-36.8	26	12.1	31	6,211	-32.1	-37.8	28	15.7	31	6,168	-31.1	-38.1	27	17.7									
400	31	7,058	-35.7	-44.2	27	22.5	31	6,997	-39.1	-45.1	29	19.2	31	7,187	-35.3	-44.4	25	13.9	31	7,031	-38.8	-42.5	27	17.1	31	7,013	-37.1	-44.0	27	20.2									
350	31	7,976	-42.6		27	23.5	31	7,902	-46.1		29	20.4	30	8,063	-42.8		26	15.4	31	7,957	-45.4		27	18.8	31	7,926	-44.7		27	23.4									
300	31	8,997	-50.1		27	25.7	31	8,907	-53.2		25	22.6	30	9,083	-50.1		26	17.7	31	8,945	-52.6		28	20.0	31	8,943	-51.1		27	25.4									
250	31	10,169	-55.1		26	30.3	31	11,068	-57.4		29	21.8	29	10,261	-55.3		27	19.6	31	10,110	-56.9		29	19.1	30	10,119	-56.7		27	27.1									
200	31	11,580	-53.3		27	29.3	31	11,482	-55.2		28	18.2	28	11,794	-54.5		27	22.4	31	11,524	-55.1		29	16.7	30	11,536	-54.8		28	26.9									
175	31	12,955	-52.5		31	26.8	31	13,141	-52.3		29	18.1	28	12,536	-53.6		29	21.6	31	12,811	-53.0		29	18.6	31	12,994	-53.1		28	26.9									
150	31	13,450	-51.1		27	26.2	31	13,340	-51.6		29	20.4	31	13,528	-53.7		27	20.4	31	13,377	-52.4		28	14.6	30	13,389	-52.9		27	24.4									
125	31	14,624	-54.6		27	23.7	31	14,521	-52.4		29	13.9	28	14,697	-55.3		27	19.6	31	14,456	-52.5		29	12.9	29	14,565	-54.1		27	21.4									
100	31	16,054	-55.6		28	19.7	31	15,961	-53.1		29	12.2	28	16,114	-57.3		27	16.6	31	15,995	-53.4		29	11.1	29	15,992	-55.5		27	18.6									
75	31	17,470	-56.9		27	17.5	30	17,398	-53.2		29	10.0	28	17,519	-58.5		27	12.4	31	17,430	-53.5		29	9.1	29	17,412	-56.4		27	14.6									
50	31	18,516	-56.9		27	15.4	31	18,259	-52.4		30	13.5	6	18,358	-59.1		27	10.1	31	18,290	-53.1		29	6.3	30	18,260	-56.2		28	14.6									
25	31	19,294	-57.3		27	11.8	30	19,254	-53.0		30	6.0	27	19,325	-59.5		27	7.5	31	19,280	-54.6		31	5.6	29	19,273	-58.4		28	10.7									
0	31	20,445	-57.9		28	8.2	30	20,431	-52.6		31	4.6	27	20,469	-58.5		28	4.0	30	20,445	-53.6		33	4.7	29	20,398	-55.5		28	7.4									
42	21	21,853	-57.6		29	5.3	27	21,882	-52.3		36	2.6	24	21,869	-58.4		31	1.9	29	21,888	-53.1		01	3.5	29	21,819	-56.0		29	4.1									
30	19	23,663	-56.5		14	2.9	25	23,738	-52.4		05	4.8	18	23,692	-56.3		04	4.7	22	23,741	-52.9		05	5.8	29	23,651	-55.4		15	2.2									
25	17	24,611	-55.9		01	2.8	23	24,424	-52.4		08	7.2	18	24,851	-56.6		06	5.6	20	24,922	-52.6		06	6.4	29	24,816	-54.9		02	2.7									
20	15	26,235	-54.1		9	2.1	21	26,378	-52.4		17	5.7	18	26,778	-54.9		06	5.7	17	26,744	-52.3		15	17.7	29	26,255	-54.7		13	1.9									
15	13	28,088	-53.6		07	4.1	16	28,241	-52.0		07	13.0	6	28,116	-54.8								04	12.4	21	28,103	-52.5		06	5.0									
10	10	30,717	-49.3		03	3.3	18	30,891	-49.5																14	30,746	-48.6		33	2.9									

GREENSBORO, NC 984 MB										GUADALUPE IS., MEXICO 1014 MB										GUAM, MARIANA IS. 1000 MB										HILO, HI 1017 MB										HUNTINGTON, WV 987 MB									
5FC	31	275	4.5	-1.3	33	5	31	23	13.5	6.4	32	7.4	31	111	24.8	21.8	06	4.2	31	10	20.4	18.3	07	7.3	31	246	1.9	-2.4	15	1																			
1000	31	564	4.6	-1.8	29	2.3	31	138	12.6	7.9	32	8.5	31	111	24.8	21.8	06	4.2	31	10	20.4	18.3	07	7.3	31	246	1.9	-2.4	15	1																			
950	31	564	4.6	-1.8	29	2.3	31	566	9.3	4.2	32	8.5	31	561	21.7	19.8	07	10.1	31	595	17.9	16.7	09	8.3	31	556	2.8	-3.2	23	2.4																			
900	31	610	4.5	-1.5	27	4.3	31	613	9.3	4.2	32	8.5	31	610	15.7	14.0	09	9.5	31	609	17.4	15.9	09	8.5	31	593	3.1	-5.0	28	2.4																			
850	31	659	3.0	-6.7	27	6.7	31	1484	1.4	-8.1	30	5.5	31	1520	16.7	10.8	09	9.4	31	1539	11.7	10.4	09	5.5	31	1451	1.2	-8.1	26	8.0																			
800	31	1959	1.8	-9.1	27	9.8	31	1980	5.5	-11.5	29	6.4	31	2036	14.6	4.1	09	8.4	31	2045	9.2	5.2	09	4.7	31	1935	-1.8	-11.4	27	9.1																			
750	31	2479	2.7	-12.9	28	11.8	31	2506	3.7	-16.1	28	8.5	31	2580	13.0	-3.6	08	7.7	31	2578	6.7	-2.6	09	4.6	31	2448	-2.9	-15.4	27	10.9																			
700	31	3029	-2.1	-15.6	28	14.1	31	3062	1.7	-18.4	28	10.5	31	3157	10.6	-9.7	08	6.6	31	3143	4.5	-9.1	09	3.6	31	2993	-4.9	-16.2	27	13.3																			
650	31	3615	-5.1	-17.4	28	17.1	31	3654	-2.6	-22.1	27	11.7	31	3771	7.8	-12.4	08	5.4	31	3744	1.4	-11.1	10	3.1	31	3573	-7.7	-19.2	28	14.8																			
600	31	4240	-4.7	-20.8	28	21.1	31	4283	-6.7	-25.1	26	14.4	31	4378	4.2	-16.3	08	5.7	31	4361	-1.6	-14.1	11	2.3	31	4197	-10.4	-22.7	28	16.4																			
550	31	4909	-13.2	-25.7	27	22.2	31	4956	-1.3	-28.1	28	15.3	31	5128	1.2	-18.9	08	4.4	31	5070	-6.2	-10.2	10	2.3	31	4855	-15.5	-25.7	27	19.1																			
500	31	5628	-18.0	-30.7	27	24.3	31	5679	-16.4	-33.1	28	17.8	31	5887	-3.9	-23.1	09	4.3	31	5810	-10.1	-25.5	12	3.8	31	5568	-20.3	-30.9	27	21.6																			
450	31	6407	-27.3	-35.1	27	27.9	30	6467	-12.0	-36.9	28	19.5	31	6710	-8.8	-27.4	09	4.2	31	6615	-15.7	-30.0	29	5.4	31	6340	-25.7	-36.8	27	25.1																			
400	31	7259	-29.6	-39.3	27	31.4	30	7322	-28.5	-41.5	28	23.8	31	7612	-14.8	-32.7	09	4.5	31	7494	-21.5	-35.7	28	8.8	31	7183	-31.8	-42.8	27	28.6																			
350	31	8202	-36.1	-43.2	27	37.1	30	8269	-35.0	-45.5	26	29.0	31	8613	-21.6	-38.0	09	4.6	31	8468	-27.9	-47.9	28	14.4	31	8117	-38.2	-45.6	27	33.2																			
300	31	9253	-42.7	-48.9	29	43.1	30	9322	-42.5	-47.4	26	32.5	31	9654	-25.4	-40.1	09	4.2	31	9511	-35.1	-49.9	29	19.9	31	9197	-47.9	-52.7	27	37.1																			
250	31	10455	-51.5	5	28	42.7	30	10535	-50.0	5	28	37.3	31	10959	-40.1	-51.4	12	2.3	31	10806	-42.6	-54.0	28	23.0	31	10359	-51.8	27	41.3																				
200	31	11887	-55.4	27	48.0	29	11968	-56.8	28	45.3	31	12482	-52.3	15	7.1	31	12292	-51.9	28	27.7	31	11794	-54.6	27	44.9																								
175	31	12738	-55.9	27	43.6	28	12813	-57.8	28	42.8	31	13333	-59.2	15	7.1	31	13137	-57.4	28	25.9	31	12650	-54.3	27	41.8																								
150	31	13718	-56.6	27	37.9	29	13779	-60.5	28	37.6	31	14281	-67.1	13	8.4	31	14097	-63.5	28	22.2	31	13617	-55.1	27	38.4																								
125	31	14868	-59.4	27	31.2	24	14902	-64.0	28	29.6	31	15361	-74.7	12	8.4	30	15199	-69.7	29	19.4	30	14797	-57.2	27	33.1																								
100	31	16255	-62.3	27	25.7	23	16263	-66.7	27	26.0	29	16632	-82.3	10	9.4	26	16505	-75.5	29	12.4	30	16190	-57.7	27	27.1																								
75	30	17630	-62.7	27	20.1	21	17597	-68.0	27	19.7	28	17875	-81.4	9	10	17	17791	-76.8	29	5.8	29	17590	-60.6	27	22.1																								
70	31	18454	-62.9	27	13.0	21	18401	-67.3	27	12.7	27	18629	-78.4	09	7.2	21	18561	-74.4	29	3.8	29	18422	-60.6	27	18.5																								
60	31	19403	-62.6	28	8.4	21	19332	-66.5	27	9.4	27	19520	-73.9	09	6.4	21	19469	-70.0	29	9	28	19381	-60.7	27	13.6																								
50	31	20530	-61.9	29	7.5	19	20436	-64.6	27	6.6	26	20596	-69.3	09	9.5	20	20562	-66.6	06	1	28	20518	-60.4	28	8.5																								
40	30	21918	-59.9	32	3.2	19	21810	-62.0	27	2.2	26	21940	-65.3	10	12	7.2	21	21918	-65.3	10	2.3	26	21920	-58.7	29	4.1																							
30	32	23272	-58.0	06	2.6	16	23167	-59.2	07	2.0	26	23709	-59.3	10	7.2	21	23688	-60.4	08	4.4	25	23736	-55.6	30	5.4																								
20	32	24881	-56.4	07	2.2	14	24742	-57.8	08	03	2.6	26	25408	-59.9	08	2.9	21	25389	-58.9	08	3.5	25	25409	-56.0	30	2.5																							
20	26	26303	-54.5	07	3.2	9	26113	-55.2	07	3.0	25	26305	-50.7	30	24	26247	-54.4	08	1	25	26311	-55.1	06	3.4																									
15	24	28155	-53.7	09	3.1	5	27960	-52.1	07	33	28198	-47.3	31	5.0	27	28106	-50.6	07	1.8	19	28153	-52.0	24	2.9																									
10	37	30485	-51.0	27	10.6					16	30910	-44.1			13	30777	-44.0		24	1.3	9	30481	-45.7																										

Average monthly values

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## Average monthly values

NASHVILLE, TN 995 MB										NOME, AK 1005 MB										NORTH PLATTE, NE 915 MB										OAKLAND, CA 1017 MB										OMAHA, NE 967 MB									
Standard pressure surface mb		No of observations		Dynamic height meters		Temperature °C		Resultant Wind		No of observations		Dynamic height meters		Temperature °C		Resultant Wind		No of observations		Dynamic height meters		Temperature °C		Resultant Wind		No of observations		Dynamic height meters		Temperature °C		Resultant Wind																	
580	31	180	4.3	-9.06	-1.1	30	5	-9.0	-14.1	05	3.9	31	84.7	-2.6	-6.8	36	1.3	11	1	6.1	1.2	32	8	31																									
1000	10	202	0	-5.6	0.2	6	18	88	-6.1	06	3.0									143	10.3	4.8	33	2.0																									
950	31	555	4.9	-1.0	2.22	2.4	30	439	-7.0	-12.1	10	6.0							1	8.8	8.8	0.34	4.4	31	519	-1.5	-5.5	35	2.6																				
900	31	995	4.0	-3.8	2.5	5.2	30	860	-8.7	-15.7	11	6.4	31	975	-2.0	-5.7	35	1.3	1	1.014	6.4	-4.1	34	4.8	31	970	-1.1	-9.4	29	2.6																			
850	31	1461	3.8	-6.4	2.7	7.3	30	1302	-10.4	-15.1	11	5.7	31	1431	-1.3	-4.7	32	2.5	1	1.081	3.7	-8.5	31	5.3	31	1426	-1.2	-11.2	29	4.2																			
800	31	1952	2.9	-9.2	2.8	9.2	30	1766	-13.0	-18.1	12	5.3	31	1914	-1.5	-11.7	32	4.4	1	1.071	1.5	-13.8	32	5.5	31	1910	-1.9	-14.1	29	4.7																			
750	31	2471	2.0	-11.7	2.8	11.7	30	2254	-15.1	-22.4	13	4.5	31	2421	-2.0	-11.7	32	5.0	1	1.051	-1.1	-16.6	32	5.9	31	2421	-2.0	-15.9	29	5.0																			
700	31	3022	-2.5	-14.0	2.7	13.5	30	2773	-19.1	-25.8	14	4.7	31	2970	-6.1	-17.9	30	6.9	1	1.035	-4.1	-19.9	32	7.6	31	2963	-6.8	-17.8	29	6.8																			
650	31	3607	-5.6	-17.3	2.7	15.1	30	3321	-22.6	-29.6	14	4.8	31	3547	-9.7	-20.7	29	8.1	1	1.016	-7.7	-21.5	31	8.3	31	3538	-9.9	-21.0	28	8.5																			
600	31	4230	-9.2	-21.0	2.7	17.6	30	3904	-26.0	-34.4	14	4.9	31	4160	-13.6	-25.4	28	9.1	1	4.234	-11.7	-25.4	31	9.9	31	4151	-13.8	-24.9	28	10.5																			
550	31	4898	-13.5	-26.1	2.7	20.9	30	4529	-29.8	-39.0	15	4.1	31	4816	-18.3	-29.7	28	9.8	1	4.894	-16.2	-29.9	31	11.1	31	4807	-18.0	-27.8	27	12.4																			
500	31	5616	-18.3	-31.4	2.8	24.0	30	5202	-34.3	-43.9	16	3.4	31	5421	-23.1	-34.2	28	11.2	1	5.605	-21.3	-34.2	30	12.6	31	5513	-23.0	-32.0	27	14.8																			
450	31	6395	-23.6	-35.5	2.6	26.1	30	5932	-38.9	-48.7	17	3.3	31	6284	-28.7	-38.6	27	12.4	1	6.373	-27.1	-38.0	31	14.6	31	6276	-26.8	-37.6	26	16.8																			
400	31	7245	-29.7	-40.6	2.6	30.5	30	6712	-44.0																																								

PAGO PAGO, AMERICAN SAMOA										PEOPLES, IL										PITTSBURGH, PA										PONAPE, CAROLINE IS.										PORTLAND, ME									
1078 ME										992 ME										974 ME										1005 ME										1013 ME									
SFC	31	5	29.9	25.6	05	2.6	31	200	-1.7	-4.7	06	1.8	31	359	-9	-4.8	24	4	31	39	28.6	23.9	06	3.7	31	20	-2.3	-7.6	36	1.2																			
1000	31	73	28.5	24.7	05	2.8	31	980	-1.7	-9.2	30	2.1	31	986	-2.3	-5.8	26	5.4	31	80	27.4	23.0	06	4.5	29	129	-2.0	-7.8	35	2.1																			
950	31	529	24.8	22.6	04	3.8	31	548	-7.7	-5.6	28	6	30	561	-8	-4.5	26	7.6	31	533	23.6	20.8	07	8.8	31	957	-2.8	-9.3	35	2.1																			
900	31	1,003	21.7	19.8	06	4.0	31	980	-1.7	-9.2	30	2.1	31	986	-2.3	-5.8	26	5.4	31	1,005	20.3	18.9	07	10.1	31	957	-2.8	-10.6	33	3.1																			
850	31	1,499	16.1	16.1	06	3.1	31	1,435	-1.7	-12.7	29	3.8	31	1,434	-1.8	-9.8	27	8.2	31	1,499	16.1	16.1	06	9.8	31	1,409	-5.2	-12.2	31	3.6																			
800	31	2,019	16.3	13.0	04	3.5	31	1,917	-7.7	-12.4	28	4.9	31	1,918	-4.5	-11.8	28	9.6	31	2,015	16.0	7.4	08	6.7	31	1,879	-6.8	-15.5	29	5.7																			
750	31	2,567	14.0	11.6	03	3.4	31	2,427	-4.5	-13.8	28	6.5	31	2,425	-5.9	-13.8	28	11.0	31	2,562	13.6	1.7	08	4.9	31	2,381	-8.2	-17.1	28	8.2																			
700	31	3,148	10.9	3.9	03	3.3	31	2,968	-7.0	-16.6	28	8.7	31	2,964	-7.7	-17.1	28	13.5	31	3,140	10.2	-1.5	08	4.2	31	2,916	-9.6	-19.8	28	10.2																			
650	31	3,763	7.8	0.0	04	3.0	31	3,543	-9.9	-19.7	27	10.5	31	3,518	-10.1	-19.7	29	15.9	31	3,753	7.1	-6.1	08	3.9	31	3,486	-12.3	-22.2	28	12.1																			
600	31	4,420	4.6	-3.6	03	3.2	31	4,157	-13.6	-22.4	28	12.5	31	4,152	-13.4	-22.9	28	17.7	31	4,408	3.7	-6.6	08	4.9	31	4,094	-15.9	-23.7	27	18.1																			
550	31	5,123	3.1	-8.6	06	3.1	31	4,813	-17.1	-26.7	27	16.7	31	4,804	-17.1	-26.4	27	22.6	31	5,112	3.1	-12.8	09	7.1	31	4,755	-18.2	-27.0	27	23.1																			
500	31	5,861	-4.0	-16.4	06	2.7	31	5,520	-27.1	-31.7	27	16.7	31	5,517	-22.2	-32.9	28	27.6	31	5,868	-4.0	-16.8	09	7.1	31	5,445	-24.7	-33.0	27	17.7																			
450	31	6,706	-8.4	-21.5	07	2.7	31	6,286	-27.8	-37.7	27	18.3	31	6,282	-28.8	-37.8	28	23.3	31	6,693	-8.6	-21.5	09	8.1	31	6,203	-30.3	-37.3	26	20.5																			
400	31	7,611	-14.1	-28.2	08	2.7	31	7,122	-34.1	-44.6	27	20.4	31	7,118	-34.1	-43.9	27	26.2	31	7,597	-14.3	-26.7	09	8.5	31	7,031	-35.9	-44.2	26	23.3																			
350	31	8,614	-20.7	-34.7	12	2.8	31	8,046	-41.0	-55.7	27	24.4	31	8,043	-40.6	-48.7	27	29.6	31	8,600	-20.8	-34.0	10	7.2	31	7,950	-42.0	-54.8	26	27.2																			
300	31	9,732	-29.2	-43.0	13	3.9	31	9,073	-49.0	-63.7	26	28.9	31	9,074	-47.3	-51.4	27	34.0	31	9,718	-29.1	-40.9	10	7.1	31	8,975	-48.6	-62.6	26	29.3																			
250	31	11,005	-39.1	-49.4	14	4.9	31	10,113	-59.1	-73.8	25	38.9	31	10,114	-57.3	-61.4	27	38.9	31	11,005	-39.1	-50.8	12	7.1	31	10,202	-48.2	-62.2	25	31.3																			
200	31	12,497	-51.5	-55.5	15	6.7	31	11,771	-55.2	-69.3	26	35.0	31	11,697	-53.7	-57.7	27	38.7	31	12,460	-52.2	-56.2	13	10.9	30	11,600	-53.2	-57.2	27	32.2																			
175	31	13,351	-58.4	-62.4	16	8.1	31	12,527	-54.8	-68.8	26	31.7	30	12,554	-53.6	-57.6	27	37.3	31	13,331	-59.2	-63.2	12	11.6	30	12,462	-52.4	-56.4	28	27.1																			
150	31	14,303	-66.2	-70.2	15	8.7	31	13,515	-54.4	-68.4	26	30.7	30	13,544	-54.5	-58.5	27	33.5	31	14,278	-67.5	-71.5	11	11.8	30	13,460	-52.6	-56.6	27	25.3																			
125	31	15,387	-74.0	-78.0	14	8.1	31	14,681	-55.7	-69.7	27	26.4	30	14,708	-55.8	-59.8	27	29.8	31	15,355	-75.5	-79.5	09	13.1	30	14,635	-53.8	-57.8	27	22.8																			
100	30	16,664	-81.0	-85.0	12	7.6	29	16,091	-57.4	-71.4	27	22.2	30	16,123	-57.3	-61.3	27	25.4	31	16,620	-82.9	-86.9	09	15.8	30	16,063	-55.5	-59.5	28	18.8																			
80	30	17,913	-88.3	-92.3	10	9.0	28	17,496	-58.4	-72.4	27	18.4	30	17,530	-58.6	-62.6	27	18.5	31	17,865	-80.9	-84.9	10	14.9	30	17,482	-56.5	-60.5	28	14.9																			
60	30	18,673	-71.1	-75.1	09	11.7	28	18,336	-58.9	-72.9	27	14.7	30	18,376	-59.1	-63.1	27	14.7	31	18,628	-78.9	-82.9	09	7.7	30	18,332	-57.7	-61.7	28	12.9																			
40	28	19,573	-71.6	-75.6	09	15.6	28	19,305	-58.7	-72.7	27	11.5	30	19,333	-59.7	-63.7	27	11.5	31	19,525	-72.1	-76.1	09	11.8	30	19,301	-57.4	-61.4	28	10.2																			
20	26	20,660	-66.8	-70.8	08	19.9	27	20,454	-58.1	-72.1	27	7.6	30	20,472	-59.2	-63.2	28	8.6	30	20,614	-67.5	-71.5	09	18.5	30	20,455	-56.8	-60.8	29	7.6																			
0	25	22,021	-63.8	-67.8	05	23.7	25	21,860	-57.3	-71.3	28	4.5	29	21,878	-57.9	-61.9	29	4.1	30	21,982	-59.7	-63.7	09	15.4	29	21,865	-56.7	-60.7	29	5.2																			
0	24	23,819	-56.8	-60.8	05	23.1	25	23,680	-56.5	-70.5	01	1.5	29	23,694	-57.0	-61.0	02	1.8	30	23,806	-53.4	-57.4	28	2.5	29	23,691	-56.1	-60.1	34	2.2																			
0	23	24,985	-53.5	-57.5	05	22.8	23	24,829	-56.0	-70.0	03	2.1	29	24,852	-56.0	-60.0	02	2.4	30	24,984	-51.7	-55.7	27	8.4	29	24,853	-55.5	-59.5	01	2.6																			
0	22	26,433	-49.7	-53.7	05	21.7	22	26,277	-52.2	-66.2	06	2.5	29	26,299	-52.7	-56.7	06	2.8	30	26,403	-48.8	-52.8	26	11.2	29	26,278	-52.2	-56.2	01	2.8																			
0	18	28,330	-45.5	-49.5	05	20.4	18	28,102	-52.3	-66.3	06	2.8	28	28,121	-52.8	-56.8	02	3.2	29	28,340	-45.6	-49.6	26	7.8	28	28,139	-52.5	-56.5	01	1.7																			
0	17	31,063	-41.5	-45.5	09	22.0	10	30,757	-47.8	-61.8	06	3.0	30	30,771	-48.6	-52.6	06	3.3	31	31,110	-39.1	-43.1	14	14	30,779	-48.8	-52.8	01	1.7																				

## Average monthly values

CALÉM,  
1011 M.

ITY, UT  
ME

SAN DIEGO, CA  
1000 MB

SAN JUAN, P. R.  
1017 MB

SAULT STE MARIE, MI  
989 MB

* VANTENREFF, CR										* VICTORIA, TX										* WAKE IS., PACIFIC AREA										* WALLOPS ISLAND, VA NASA										* WASHINGTON DULLES INT. AP									
100S										1010 MB										1016 MB										1017 MB										1007 MB									
5FC	31	100	9.4	4.5	35	1.2	31	33	13.2	10.1	07	1.1	31	5	24.4	21.1	07	5.1	31	4	3.4	-	-5	31	1.5	30	8.5	1.4	-2.8	33	1.4																		
1000	29	104	10.2	5.1	35	2.1	30	120	14.4	8.8	10	1.7	31	142	23.3	19.8	07	6.9	31	137	4.8	-2.6	29	2.0	24	164	1.3	-4.2	32	1.7																			
950	31	104	9.4	2.1	35	1.5	31	118	10.8	7.1	10	1.0	31	60	19.7	18.2	07	8.4	31	85	8.7	-3.6	28	4.6	30	55.5	1.5	-4.3	29	4.8																			
900	31	101.94	7.4	-1.6	36	3.5	31	1.007	11.5	7.5	10	2.7	31	1.054	14.7	13.5	08	3.1	31	1.054	2.9	-6.3	29	1.7	9.8	1.8	-4.7	30	1.8																				
850	31	1.48.3	5.5	-6.6	35	3.3	31	1.488	12.5	-2.7	12	4.5	31	1.540	14.4	7.5	08	3.1	31	1.454	4.9	-9.0	27	8.5	3.0	1.446	-7.8	-10.0	28	8.9																			
800	31	1.977	3.2	-12.1	37	3.7	7.1	1.996	11.2	-6.0	24	6.4	31	2.051	12.4	-5	09	4.4	31	1.940	-4.8	-11.6	27	9.9	3.0	1.929	-1.9	-12.8	28	9.9																			
750	31	2.497	1.6	-14.1	32	4.4	31	2.532	8.7	-9.0	25	8.5	31	2.591	10.4	-5.9	08	3.4	31	2.455	-2.5	-14.4	27	11.8	3.0	2.441	-3.4	-13.9	28	10.6																			
700	31	3.548	-2.5	-18.1	31	4.9	31	3.049	6.6	-11.5	25	11.4	31	3.164	9.0	-11.2	06	2.4	31	3.000	-4.8	-17.5	27	14.2	3.0	2.985	-5.5	-15.5	28	12.7																			
650	31	3.632	-6.1	-20.1	31	7.2	31	3.701	1.9	-13.9	26	14.2	31	3.774	6.0	-14.3	04	1.0	31	3.583	-7.7	-19.8	27	16.2	3.0	3.564	-8.3	-18.3	28	15.8																			
600	31	4.655	-4.1	-24.5	30	6.1	31	4.721	-2.8	-15.5	25	17.1	31	4.426	2.6	-17.9	30	1.9	30	4.201	-11.1	-23.2	27	19.2	3.0	4.181	-11.8	-21.6	27	17.8																			
550	31	4.972	-14.1	-29.3	30	10.3	31	5.021	-19.4	-24.5	24	26.7	31	5.052	-20.5	29	3.0	31	4.865	-26.9	27	21.5	3.0	21.5	3.0	5.555	-26.9	-31.9	27	21.7																			
500	31	5.615	-19.9	-33.5	30	11.5	31	5.672	-10.0	-23.9	25	24.1	31	5.681	-5.1	-23.6	29	5.0	30	5.579	-19.7	-31.8	27	23.1	3.0	5.555	-24.4	-31.9	27	21.7																			
450	31	6.407	-25.6	-37.5	29	13.2	31	6.555	-18.2	-27.7	26	27.4	30	6.700	-10.5	-28.6	30	6.6	30	6.354	-24.8	-36.0	27	25.4	3.0	6.327	-25.7	-36.1	27	24.5																			
400	31	7.448	-32.6	-43.7	24	14.5	31	7.425	-23.3	-31.6	26	11.3	30	7.596	-16.0	-34.2	29	9.0	30	7.700	-30.6	-41.3	27	30.0	3.0	7.170	-31.7	-41.4	27	28.7																			
350	31	8.178	-39.9	-50.9	29	16.3	31	8.150	-30.4	-38.3	26	34.8	30	8.592	-22.9	-40.0	29	11.1	30	8.139	-37.2	-45.7	27	34.7	3.0	8.104	-38.2	-43.6	27	32.2																			
300	31	9.210	-47.1	-58.1	26	18.5	31	9.465	-38.6	-44.2	26	34.8	29	9.700	-30.9	-46.7	28	12.8	30	9.185	-44.5	-54.9	27	40.7	3.0	9.147	-45.2	-54.9	26	38.0																			
250	31	1.397	-52.7	-62.7	26	21.6	31	10.692	-46.2	-51.8	26	43.8	29	10.969	-45.5	-54.2	28	13.3	30	10.186	-51.9	-61.9	27	46.6	3.0	10.344	-52.4	-62.4	27	43.4																			
200	31	11.622	-55.3	-63.7	26	24.7	31	11.913	-57.1	-62.7	26	47.0	29	12.162	-52.0	-60.4	27	13.1	30	11.817	-55.1	-63.1	27	47.8	3.0	11.774	-54.4	-62.4	27	43.5																			
175	30	12.615	-56.7	-64.7	27	27.1	31	12.949	-60.5	-65.5	26	45.0	29	13.304	-56.6	-64.6	27	12.2	30	12.671	-54.7	-62.7	28	42.2	3.0	12.629	-54.1	-62.1	27	39.5																			
150	30	13.616	-55.4	-63.7	27	26.6	31	13.925	-62.6	-67.6	26	41.3	29	14.256	-63.6	-68.6	28	11.5	29	13.653	-56.2	-64.2	28	33.9	3.0	13.618	-54.5	-62.5	27	33.3																			
125	30	14.822	-58.6	-66.7	27	23.2	31	15.042	-65.7	-70.7	26	35.8	29	15.342	-73.6	-78.6	28	10.0	29	14.807	-57.9	-65.9	27	32.5	3.0	14.782	-56.4	-64.4	27	28.4																			
100	30	16.219	-60.7	-68.7	27	17.8	31	16.387	-69.1	-74.1	26	27.2	28	16.618	-80.5	-85.5	28	6.4	28	16.203	-60.0	-68.0	27	26.2	3.0	16.188	-59.4	-67.4	27	24.1																			
80	30	17.681	-61.8	-69.8	27	13.5	29	17.714	-70.6	-75.6	26	19.8	27	17.867	-82.2	-87.2	30	8	27	17.595	-61.0	-69.0	27	19.4	3.0	17.583	-60.4	-68.4	27	19.3																			
70	29	18.421	-62.4	-70.4	28	10.8	23	18.504	-65.9	-70.9	26	14.3	25	18.617	-79.7	-84.7	11	1.4	27	18.423	-62.1	-70.1	28	16.8	2.9	18.416	-61.0	-69.0	27	16.5																			
50	29	19.181	-61.7	-69.7	28	6.6	22	19.426	-67.9	-72.9	26	9.4	24	19.492	-74.7	-79.7	11	3.4	26	19.176	-61.2	-69.2	28	12.5	2.9	19.174	-60.6	-68.6	28	12.9																			
30	29	20.511	-61.1	-69.1	29	4.4	21	20.513	-65.1	-70.1	26	6.4	21	20.520	-65.1	-70.1	11	3.4	27	20.195	-60.9	-68.9	28	8.0	2.9	20.511	-59.9	-67.9	29	8.4																			
20	29	21.902	-60.8	-68.8	31	2.3	17	21.901	-61.8	-66.8	27	4.0	23	21.910	-64.9	-69.9	10	2.9	28	21.705	-58.7	-66.7	29	4.8	2.9	21.902	-57.7	-65.7	29	5.0																			
10	24	23.704	-57.4	-65.4	67	2.6	15	23.688	-59.4	-64.4	12	1.5	23	23.704	-60.7	-65.7	09	6.4	23	23.720	-57.5	-65.5	36	1.8	27	23.716	-57.5	-65.5	34	2.1																			
25	21	24.857	-56.5	-64.5	07	3.1	15	24.831	-58.1	-63.1	05	1.4	22	24.847	-57.5	-62.5	08	4.8	21	24.873	-56.2	-64.2	04	1.7	26	24.870	-56.1	-64.1	04	2.2																			
20	21	26.276	-54.6	-62.6	07	3.3	15	26.244	-55.2	-60.2	05	1.2	21	26.275	-53.3	-58.3	06	4.8	16	26.291	-54.4	-62.4	08	1.3	26	26.294	-54.9	-62.9	06	2.1																			
15	16	28.124	-52.1	-60.1	05	3.4	14	28.107	-50.1	-55.1	23	3.2	21	28.137	-50.0	-55.0	06	3.0	14	28.168	-50.7	-58.7	16	2.2	30	28.146	-49.6	-57.6	07	2.4																			
1	12	30.801	-46.2	-54.2	04	1.0	12	30.794	-42.4	-47.4	23	11.4	16	30.829	-42.7	-47.7	07	1.4								22	30.816	-41.5	-49.5	28	5.4																		



## Average monthly values

1950 年 1 月 1 日

YAP, CAROLINE IS.  
1079 MF

## SOLAR RADIATION INTENSITIES

Tabulated in langleys per minute on a surface normal to the direction of the sun.

MARCH 1980

Sun's zenith distance									
Date	A M				*	P M			
	78 7'	75 7'	70 7'	60 0"		60 0"	70 7'	75 7'	78 7'
HAUNA LOA OBSERVATORY, HI									
Air mass									
	1.34	2.63	3.01	1.34	*	1.34	2.01	2.63	1.34
1-----	1.24	1.31	1.39	1.51	1.61	-----	-----	-----	-----
2-----	1.21	1.28	1.37	1.49	1.59	-----	-----	-----	-----
3-----	1.22	1.30	1.38	1.49	1.57	-----	-----	-----	-----
4-----	1.24	1.30	1.38	1.50	-----	-----	-----	-----	-----
5-----	1.20	1.26	1.35	1.47	-----	-----	-----	-----	-----
6-----	1.20	1.27	1.36	1.49	-----	-----	-----	-----	-----
7-----	1.21	1.29	1.38	1.49	-----	-----	-----	-----	-----
8-----	1.17	1.25	1.34	1.46	-----	-----	-----	-----	-----
9-----	1.20	1.27	1.37	1.48	-----	-----	-----	-----	-----
10-----	1.17	1.26	1.36	1.50	-----	-----	-----	-----	-----
11-----	1.20	1.30	1.37	1.44	1.61	-----	-----	-----	-----
12-----	1.11	1.18	1.31	1.42	-----	-----	-----	-----	-----
13-----	-----	-----	-----	1.60	1.49	1.38	1.29	1.21	-----
14-----	1.19	1.29	1.35	1.48	-----	-----	-----	-----	-----
Aver- ages	1.10	1.27	1.36	1.48	1.60	1.49	1.38	1.29	1.21

Sun's zenith distance									
Date	A M				*	P M			
	78 7'	75 7'	70 7'	60 0"		60 0"	70 7'	75 7'	78 7'
TUCSON, AZ									
3-----	-----	-----	-----	1.42	1.28	-----	-----	-----	-----
4-----	.86	.94	1.06	1.24	1.45	-----	-----	-----	-----
5-----	.94	1.03	1.16	1.31	1.47	1.30	1.14	1.02	.91
6-----	.91	1.01	1.13	1.30	-----	-----	-----	-----	-----
7-----	.91	1.01	1.14	1.31	1.44	1.28	-----	-----	-----
8-----	.85	.95	1.09	1.22	1.37	1.25	1.09	.96	.89
9-----	.87	.98	1.09	1.28	1.42	1.22	1.04	.99	.90
10-----	.82	.93	1.06	1.26	1.40	1.16	1.00	.88	.77
11-----	.83	.95	1.07	1.25	1.45	1.22	1.03	.89	.81
12-----	.96	1.08	1.19	1.33	1.50	1.31	1.15	1.01	.89
13-----	.93	1.04	1.15	1.31	-----	-----	-----	-----	-----
14-----	.88	.97	1.09	1.29	1.45	1.30	1.14	1.03	.94
15-----	-----	-----	-----	1.30	1.46	1.32	-----	-----	.92
16-----	-----	-----	1.00	1.18	1.40	1.23	1.09	.95	.84
17-----	-----	-----	-----	-----	-----	-----	1.08	-----	.81
18-----	.70	.80	.92	1.15	1.37	1.19	-----	-----	-----
19-----	-----	-----	-----	-----	1.17	1.05	.93	.82	-----
20-----	-----	-----	-----	1.13	1.43	1.27	1.12	.98	.86
21-----	.87	.97	1.10	1.26	1.46	1.27	1.11	.97	.87
22-----	.98	1.07	1.19	1.36	1.51	1.31	1.16	1.03	.94
23-----	.79	.88	.99	1.20	1.50	1.32	1.17	1.06	.97
Aver- ages	.87	.97	1.09	1.26	1.44	1.26	1.10	.97	.87

## NET RADIATION

Net radiation in langley's per day (8 a.m. to 8 a.m.) at Palmer, Alaska.

MARCH 1980

Date . . . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langley's . .	- 37	~	16	8	- 19	12	- 26	9	- 39	- 73	- 65	- 59	- 66	- 40	- 63	- 43	- 41	- 56	- 63	- 29	- 25	- 27	- 29	- 31	35	18	8	17	25	38	M	22



# REFERENCE NOTES

## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES:

Dates in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

+ And also on an earlier date or dates.

D Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snowfall.

CLIMATOLOGICAL DATA -- METRIC UNITS: Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

B Number of days maximum 21.1°C. or above for Alaskan Stations.

Y Peak Gust.

+ And also on an earlier date or dates.

U Indicates Urban site.

R Indicates Rural site.

Ø Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

1 foot = 0.3048 meters

°F. = 9 x °C + 32

5

1 inch = 25.4 millimeters

1 mile per hour = 0.447 meters per second

HEATING DEGREE DAYS: Data from airport unless otherwise specified.

U Indicates Urban site.

R Indicates Rural site.

COOLING DEGREE DAYS: Data from airport unless otherwise specified.

U Indicates Urban site.

R Indicates Rural site.

## STORM SUMMARY:

○ Includes crop damage.

C Crop damage.

\* No occurrence of storms or unusual weather phenomena reported.

@ Includes heavy sleet storm.

# Freezing drizzle and freezing rain, commonly known as glaze.

Ø For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.

† No Storm Data Report received for this State.

◇ Report Incomplete.

† Storm damages are placed in categories varying from 1 to 9 as follows:

1 Less than \$50

2 \$50 to \$500

3 \$500 to \$5,000

4 \$5,000 to \$50,000

5 \$50,000 to \$500,000

6 \$500,000 to \$5 Million

7 \$5 Million to \$50 Million

8 \$50 Million to \$500 Million

9 \$500 Million to \$5 Billion

## RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, G.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Dew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Dew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Dew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygrometers. These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

\* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.

+ Observations for these stations are scheduled at 0000 G.C.T.

† Dew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Dew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Dew Point temperatures replaced Relative Humidity January 1967.

SOLAR RADIATION INTENSITIES: Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

( ) Clouds Present

\* Values corresponding to true solar noon

DM Moderate Dust

DS Slight Dust

F Fog

GF Ground Fog

H Haze

HI Intense Haze

HM Moderate Haze

HS Slight Haze

I Intense Haze-indeterminable

K Smoke

KI Intense Smoke

KM Moderate Smoke

KS Slight Smoke

M Moderate Haze-indeterminable

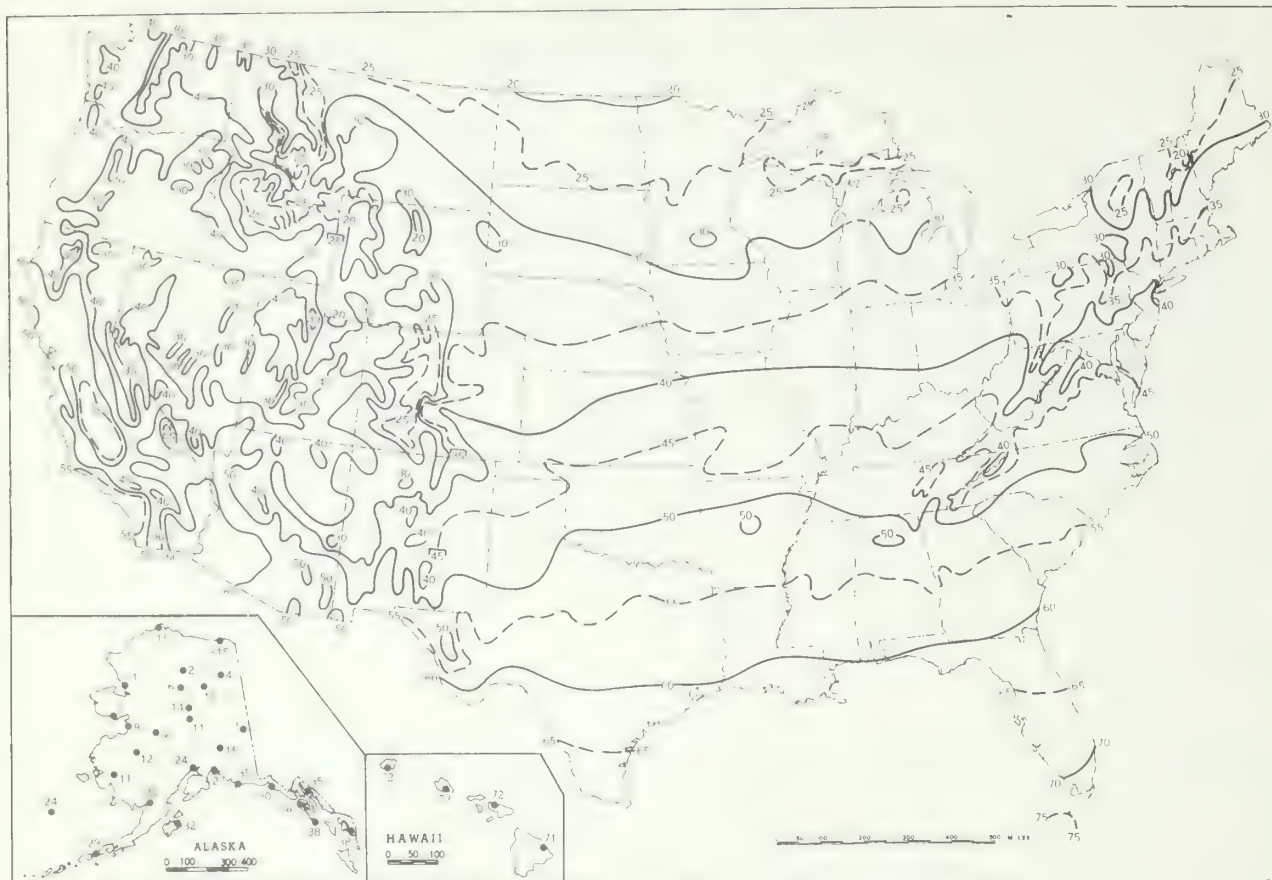
N Sand

S Slight Haze-indeterminable

NET RADIATION: The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of sod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.

Chart 1. A. Normal Daily Average Temperature (°F. 1941-70), March.



B. Temperature Departure from 30 - Year Mean (°F 1941-70), March 1980

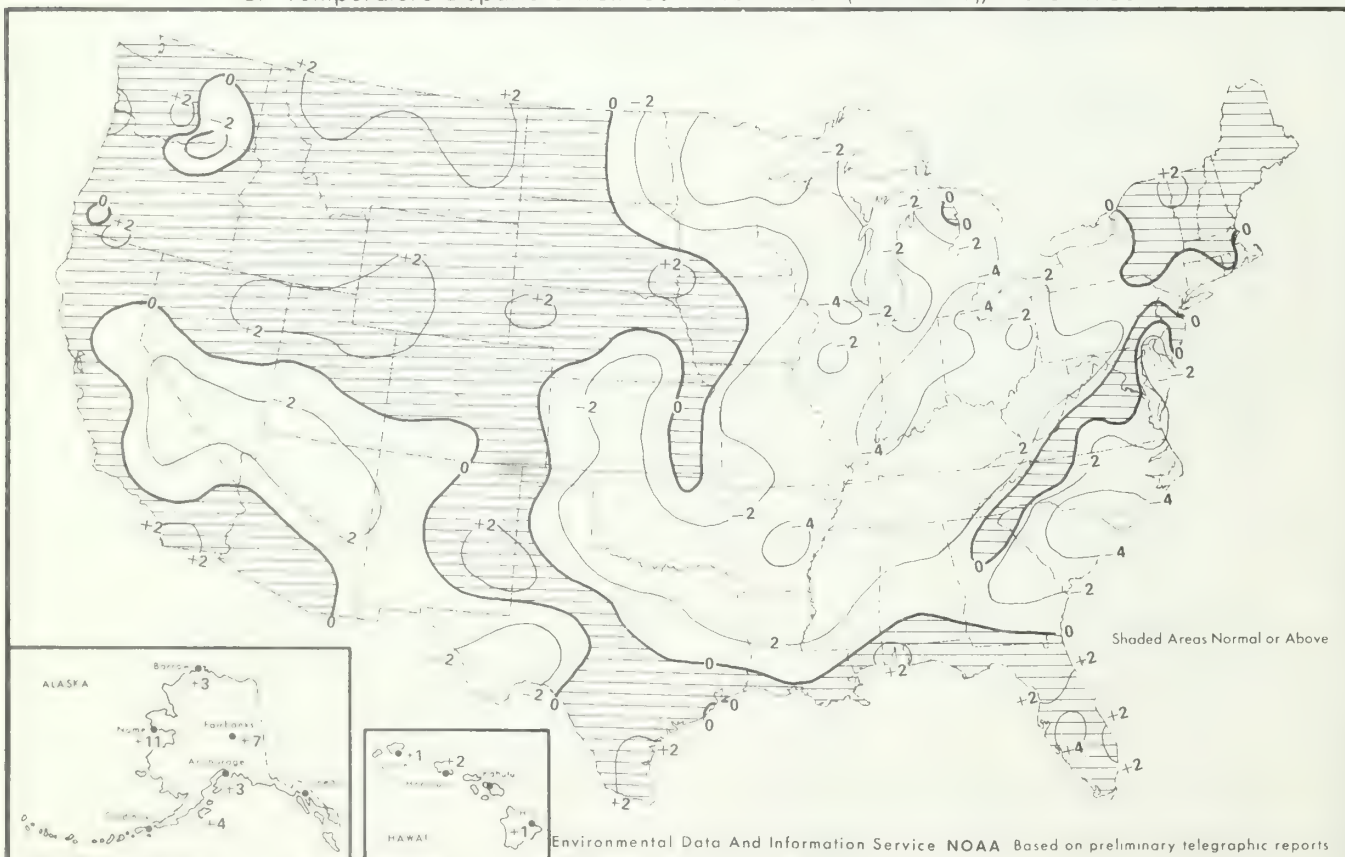
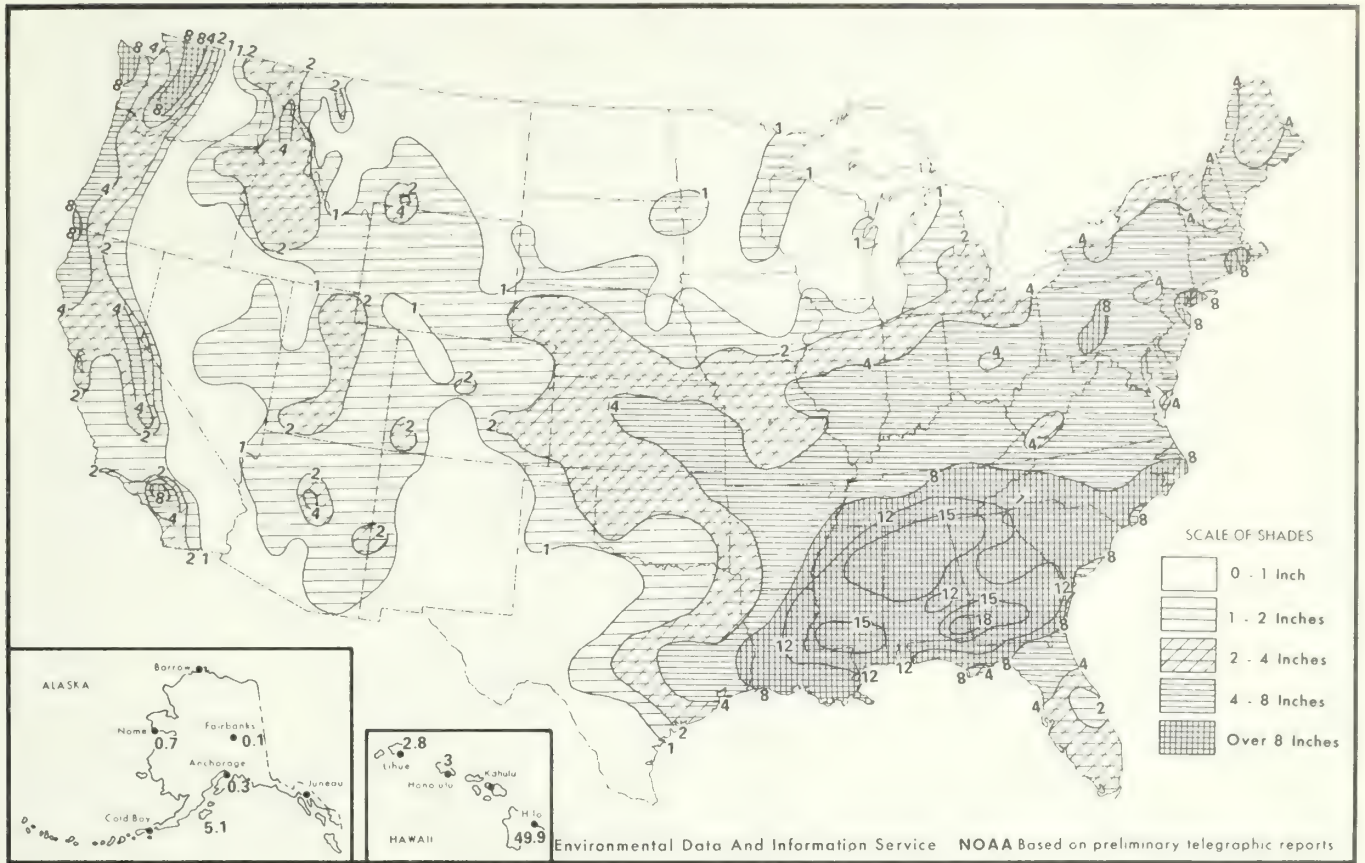




Chart II. A. Total Precipitation (Inches), March 1980



B. Percentage of Normal Precipitation, March 1980

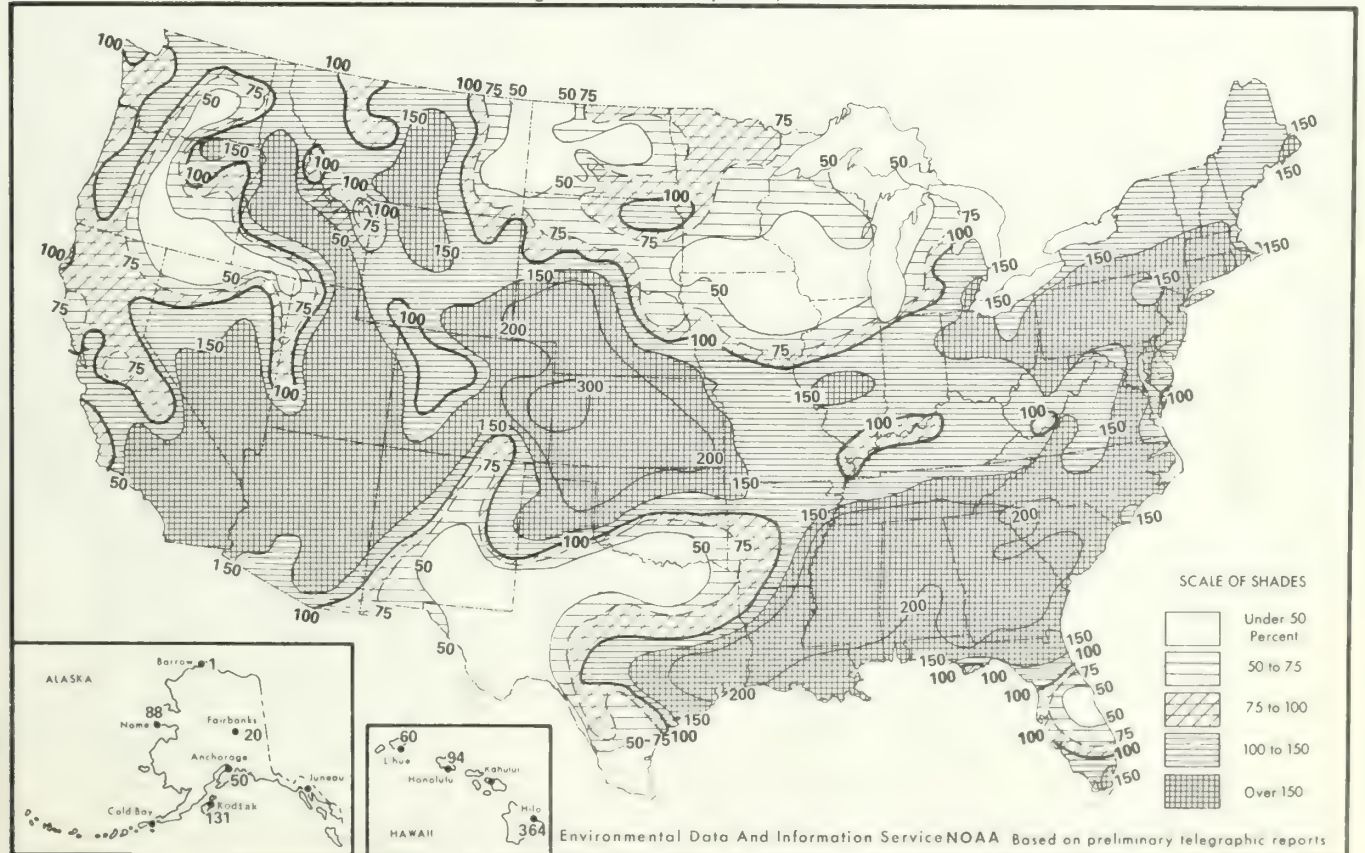
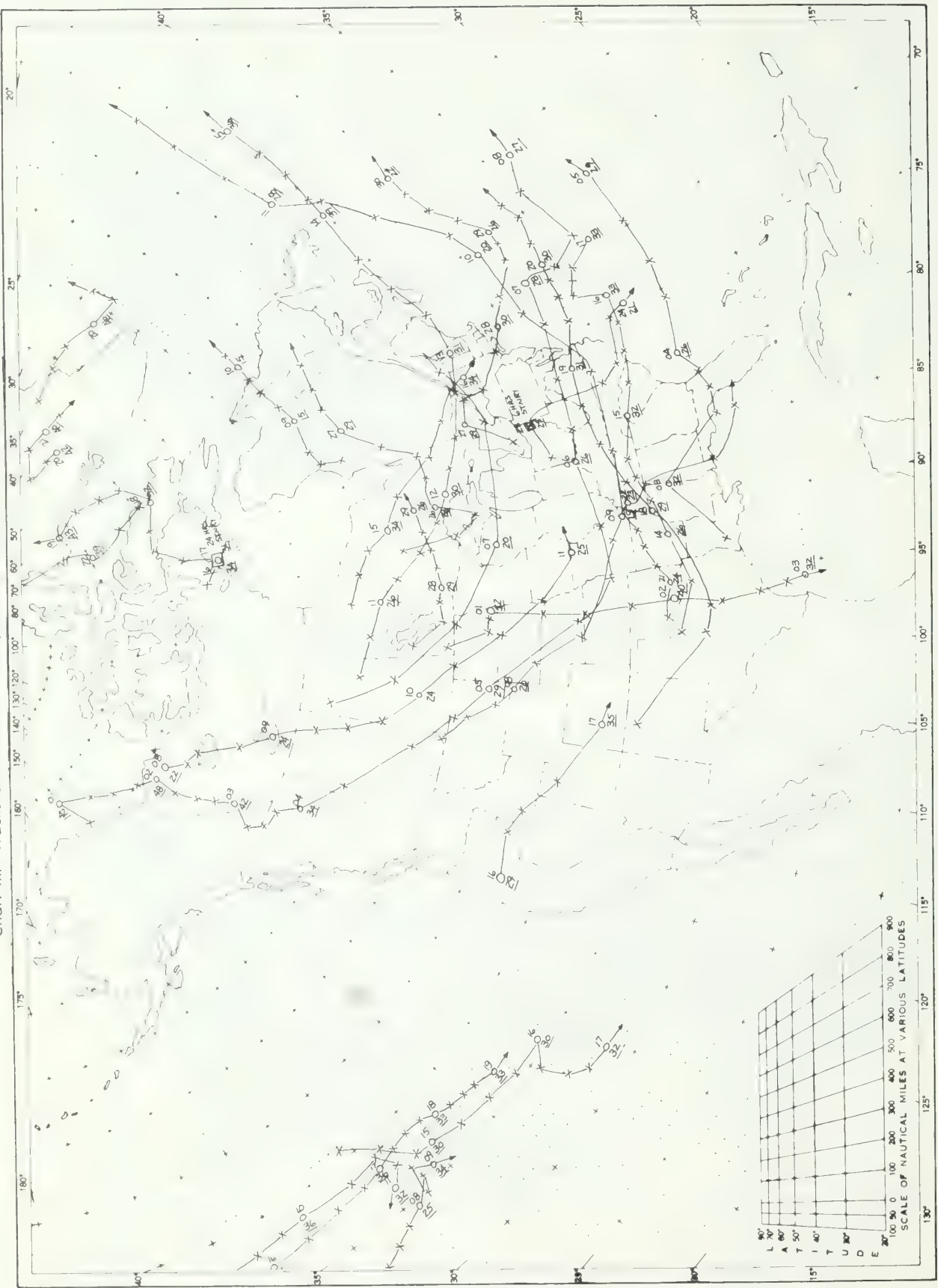


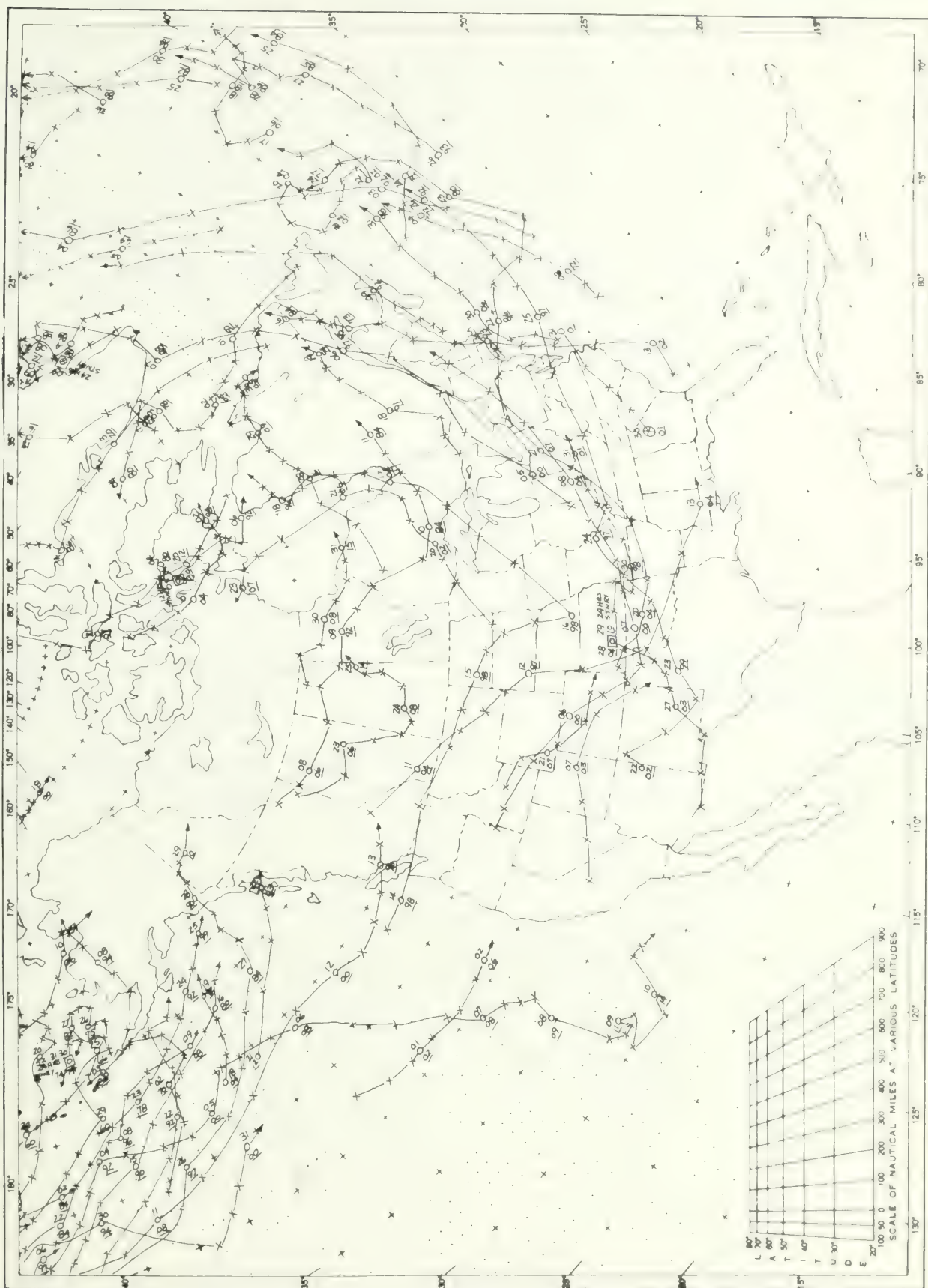
Chart III. Tracks of Centers of Anticyclones at Sea Level, March 1980



Circle indicates position of center at 7 00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.



Chart IV. Tracks of Centers of Cyclones at Sea Level, March 1980



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar  
 x's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track  
 indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included

DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
ENVIRONMENTAL DATA AND INFORMATION SERVICE  
NATIONAL CLIMATIC CENTER  
FEDERAL BUILDING  
ASHEVILLE, NC 28801

POSTAGE AND FEES PAID  
U. S. DEPARTMENT OF COMMERCE  
210



## CONTROLLED CIRCULATION RATE

CDNS- -FR

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SCIENCE, TECH. & AGR. DIVISION  
CLEMSON, SC

29631



# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



"I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF  
THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRA-  
TION AND IS COMPILED FROM INFORMATION RECEIVED AT  
THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH  
CAROLINA 28801."

*Daniel B. Mitchell*

DIRECTOR  
NATIONAL CLIMATIC CENTER

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NOTE: Late reports and corrections will be carried in the June and December issues of this publication. An explanatory page "Description of Charts" will be carried in the January and July issues.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

APRIL 1980

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist  
Environmental Data and Information Service, NOAA

**HIGHLIGHTS:** Early in the month, unseasonable snow fell in Kansas, Arkansas, and Missouri. A series of storms moving out of the central Rockies brought severe weather and deluges of rain to most of the southeastern United States. The rain spread northward along the East Coast and into New England. Record-breaking high temperatures were recorded in the northern Plains after midmonth. Near the end of April a low pressure system stagnated in the Northeast and ended the month with rainy weather and occasional thunderstorms in that area.

On the 1st, a series of storm systems were forming in the southern Plateau and Rockies. The disturbed weather continued in these areas during the 1st ten days of the month. Snow fell in most of the western mountains during this period, but eastern Colorado received the largest amounts. Some of the storms moved into the central Plains and tracked northeastward. The snow area moved into Kansas and Nebraska; over 6 inches stayed on the ground in eastern Colorado, western Kansas and southwest Nebraska. The storms carried rain to the western Great Lakes area and then eastward to the mid-Atlantic States and into New England. Some storms moved southeastward from the central Plains and brought more heavy rain to the Gulf Coast area. The heaviest rain was confined to the immediate coastal region and Florida. Conditions were cold in the Rockies and Plateau but very warm for this time of year in the northern plains.

The respite from heavy rain was short lived in the South. On the 10th, another storm had moved out of the Rockies and was winding up in Oklahoma. The storm moved rapidly northeastward trailing a cold front into the Gulf of Mexico. From eastern Texas through Michigan and eastward to the Atlantic, thunderstorms, hail, and tornadoes were reported. Flood-

ing was prevalent in the lower Mississippi Valley. As the storm moved northeastward, it left a mantle of snow in portions of Arkansas and Missouri. This unusual spring weather was repeated on the 14th when another storm formed in the Gulf and moved northward through the Great Lakes. The second storm caused additional heavy rain and severe weather from the lower Mississippi Valley through the Great Lakes and eastward to the Atlantic. By the 17th, rain was light in most of the Nation, but another low pressure in the Gulf moved eastward and spread light to moderate showers along the coast and through Florida. Some severe weather occurred in Florida on the 20th.

The last ten days of April began with unseasonably warm air moving northward through the Plains and then southeastward. Many record high temperatures for so early in the Spring were set, first in the central Plains and then in Montana. On the 22d, temperatures reached 100° in North Dakota and in Iowa on the 23d. High 80's were recorded throughout the Midwest on the 23d and the 90's in the Carolinas the next day. The wedge of warm air was followed by cold air and some snow in the Great Lakes area. Temperatures dropped into the 20's in the Lakes region and the 30's in the Midwest. As the month ended, a ridge of high pressure became nearly stationary from the western mountains into Canada. This caused a low pressure system to move very slowly from the lower Mississippi Valley northeastward. Rain and severe weather spread from the central Plains through the South and then to New England. The rainy weather slowly cleared in the South, but as the month ended intermittent rain and occasional thunderstorms continued from the mid-Atlantic states into New England.

## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

APRIL 1980

STATE	Temperature						Precipitation					
	Monthly extremes						Monthly extremes					
	Station	Highest °F	Date	Station	Lowest °F	Date	Station	Greatest In.	Station	Least In.		
Alabama	Anniston FAA AP	92	23	2 Stations	29	6+	Mobile WSO AP	15.43	Cottonton	4.22		
Alaska	4 Stations	63	29+	Galbraith	-38	10	Little Port Walter	25.84	Tok	.00		
Arizona	Gila Bend	110	19	Hawley Lake	-16	4	Tonto Creek F R 2	2.74	5 Stations	.00		
Arkansas	Booneville 3 SSE	92	22	3 Stations	25	15+	Des Arc	8.77	Odell 3 N	1.01		
California	2 Stations	106	19	2 Stations	1	7+	Crescent City 7 ENE	6.89	3 Stations	.00		
Colorado	Julesburg	93	21	Rio Grande Reservoir	-28	1	Evergreen	6.32	Kremmling 1 E	.15		
Connecticut	Wigwam Reservoir	76	21	Middletown 4 W	22	3	Stevenson Dam	9.77	Groton	4.73		
Delaware	Bridgeville 1 NW	80	24	Wilmington WSO AP	27	17	Milford 2 WSW	6.84	Newark University Farm	4.25		
Florida	5 Stations	93	27+	Fountain 3 SSE	34	6	Hialeah	13.86	Stuart 1 N	1.42		
Georgia	Thomaston 2 S	95	23	Blairsville Exp Sta	26	17	Donalsonville 1 S	8.26	Hartwell	1.00		
Hawaii	Puukohola Heiau 98.1	95	5	Mauna Loa Slope Obs	31	25+	Kailuli 436	64.69	7 Stations	.00		
Idaho	Rooskia	90	27	Soda Springs	-2	2	Penn Ranger Station	3.32	Mountain Home	.02		
Illinois	hommouth	93	22	Mount Carroll	20	13	Walnut	4.59	Mount Pulaski	1.16		
Indiana	Ogden Dunes	92	22	Angola	21	17	Paoli	4.28	Knightstown	1.66		
Iowa	2 Stations	100	22	2 Stations	16	12	Le Claire L and D 14	2.65	Lake Park	.59		
Kansas	2 Stations	96	22	2 Stations	18	4	Elkhart 6 NNE	5.45	Osawatomie	.60		
Kentucky	3 Stations	90	23+	Gray Hawk	22	17	Cumberland 2	5.02	Covington WSO AP	1.96		
Louisiana	Covington 4 NNW	91	21	Ashland 2 S	31	15	Saint Bernard	24.06	Lake Charles WSO AP	1.59		
Maine	East Hiram	73	21	Rangleey	9	7	West Rockport 1 NNW	7.93	Fort Kent	1.81		
Maryland	3 Stations	82	22+	McHenry 2 NW	18	17	Princess Anne	8.06	Owings Ferry Landing	3.20		
Massachusetts	Chester 2	80	20	4 Stations	20	17+	Borden Brook Reservoir	7.25	Hyannis	3.01		
Michigan	3 Stations	94	23+	Herman	-1	16	Cheboygan	6.12	Grand Marais 1 SE	1.38		
Minnesota	Hawley	101	22	Tower 3 S	9	14	Waseca Exp Station	2.37	2 Stations	.00		
Mississippi	4 Stations	90	23+	3 Stations	30	16+	Biloxi City	17.15	Senatobia	4.39		
Missouri	Kansas City FAA AP	93	21	Festus 2 NW	20	4	New Madrid	4.79	Coloma	.27		
Montana	Poplar	97	20	Cooke City	-5	8	MacDonald Pass	3.11	3 Stations	.7		
Nebraska	Hartington	97	21	2 Stations	12	4	Roca	2.69	Chadron FAA AP	.25		
Nevada	Sunrise Manr Las Vegas	100	20	Beowawe U of N Ranch	6	6	Mount Rose Bowl	2.33	Boulder City	.02		
New Hampshire	3 Stations	75	20	Mount Washington	0	17	Mount Washington	6.65	Lancaster	1.98		
New Jersey	5 Stations	78	25+	Belleplain St Forest	21	17	Rahway	10.72	Cape May 2 NW	3.68		
New Mexico	Jal	92	29+	Cerro	-18	1	Lake Maloya	4.60	6 Stations	.00		
New York	2 Stations	77	21	Old Forge	8	17	Suffern Water Works	10.57	Ellenburg Depot	1.88		
North Carolina	Willard 4 SW	96	24	Grandfather Mountain	16	16	Lake Toxaway 2 SW	12.34	Elizabethtown Lock 2	.96		
North Dakota	Oakes 2 S	101	22	Fowers Lake 1 N	8	9	Bowbells	2.03	23 Stations	.00		
Ohio	Defiance	86	23	2 Stations	17	17	Chardon	4.40	Middlebourne	.80		
Oklahoma	Buffalo	93	21	Boise City 2 E	23	4	Cushing	7.90	Chickasaw NRA	.56		
Oregon	Pelton Dam	90	27	Crater Lake NPS HQ	4	7	Port Orford 5 E	14.48	2 Stations	.16		
Pennsylvania	2 Stations	81	24	Conneautville 4 ESE	11	17	Tyrone	7.50	Newell	2.20		
Puerto Rico	Benavente-Hormigueros	96	20	Adjuntas Substation	52	3	Pico Del Este	18.69	Aguirre Central	.50		
Rhode Island	Providence WSO AP	72	20	Kingston	26	18	Newport	6.28	Block Island WSO AP	3.95		
South Carolina	Darlington	96	23	3 Stations	29	17+	Hogback Mountain	8.74	Florence 2 N	1.29		
South Dakota	Britton	100	21	Ralph	10	9	Deadwood	3.22	Harrold 12 SSW	.00		
Tennessee	Mount Pleasant 2 SW	92	24	Tazewell	24	17+	Ames Plantation	8.10	Orlinda	2.23		
Texas	Catarina	104	7	2 Stations	20	13+	Center	9.14	9 Stations	.00		
Utah	Saint George	92	19	Scotfield	-12	1	Alta	3.10	Wah Wah Ranch	.00		
Vermont	Readsboro 1 SE	75	21	Mount Mansfield	7	17	Whitingham 1 W	5.68	Bristol 5 NNW	1.62		
Virginia	3 Stations	94	24	Burkes Garden	21	17	Meadows of Dan 5 SW	8.79	Louisa	2.08		
Virgin Islands	Truman Fld FAA AP	90	27+	Christiansted Fort	65	2	Fountain	10.49	Truman FLD FAA AP	1.69		
Washington	Kennewick	90	28	Mount Adams Ranger Sta	15	3	Forks 1 E	11.14	Kennewick	.29		
West Virginia	Williamson	89	24	Canaan Valley	14	17	Kopperston	7.80	Parkersburg WSO CI	2.22		
Wisconsin	Lone Rock FAA AP	97	23	Newald 4 N	10	16	Lake Geneva	4.75	Prentice 2	.11		
Wyoming	3 Stations	90	21	Darwin Ranch	-13	11+	Hecla 1 E	2.35	Lovell	.02		



# CLIMATOLOGICAL DATA

## METRIC UNITS

APRIL 1980

State and Station	Elevation (ground)	Pressure		Temperature						Precipitation				Wind		No. of days (sunrise to sunset)		Sky cover, tenths (sunrise to sunset)	%																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max. 32.2 °C or above	Min. 0 °C or lower	Average relative humidity	Total	Departure from normal	Greatest in 24 hours			With thunderstorms	No. of days	Fastest mile (1.6 kilometers)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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## APRIL 1980

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# CLIMATOLOGICAL DATA

## METRIC UNITS

APRIL 1960

State and Station	Elevation (ground)	Pressure		Temperature										Precipitation										Wind				No. of days (sunrise to sunset)		Possible sunshine (sunrise to sunset)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
		Station Q	Sea level	Average maximum	Average minimum	Departure from normal	Highest	Lowest	Date	Date	No. of days		Average dew point	%	Total	mm	Greatest in 24 hours	With thunderstorms	Maximum depth on ground	Snow, ice pellets		Resultant speed	Resultant direction	Speed (1.6 kilometers)	Direction																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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CLIMATOLOGICAL DATA  
METRIC UNITS

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State and Station	Pressure			Temperature				Precipitation				Wind				No. of days (sunrise to sunset)			Sky cover, tenths (sunrise to sunset)											
	Elevation (ground)	Station Q	Sea level	Average maximum	Average minimum	Average from normal	Highest	Lowest	Date	No. of days		Average dew point																		
										Max. 32.2 °C or above	Min. 0 °C or lower																			
													mb	mb	°C	°C	°C	°C		°C	°C	°C	°C	°C	mm	mm	mm	mm	mm	mm
PHONE ISLAND	16	1013.2	1014.4	14.6	4.8	9.7	1.2	22.2 20	-0.6 17	0	1	2.2	63	157	6.2	6.4	12	4	0	0	0.2	27	13.4	17 15	7	8	15	7.0	51	Possible sunshine
SOUTH CAROLINA																														
CHARLESTON	12	1013.2	1015.1	24.3	11.6	17.9	-0.2	32.8 23	3.3 6	2	0	11.1	70	87	1.2	51	9	5	0	0	1.5	22	12.5	28 15	10	7	13	5.8	72	
CHARLESTON E	3	1014.5	1014.5	23.9	15.1	19.4	0.7	34.4 23	9.4 15	2	0	8.3	63	78	1.0	21	10	0	0	0	1.8	24	10.7	26 15	11	10	9	5.2	78	
COLUMBIA	65	1008.4	1014.5	23.9	8.6	-1.4	33.3 23	0.0 6	2	1	8.3	63	51	-3.8	25	6	4	0	0	0	1.4	23	15.2	SW 14	13	8	9	4.6	72	
CHARLESTON - SPRINGBRO	292	975.0	1013.6	21.4	8.6	-1.1	32.8 23	2.8 6	1	0	6.7	59	88	-2.1	48	3	0	0	0	0	1.4	23	15.2	SW 14	13	8	9	4.6	72	
SOUTH DAKOTA																														
WHEELING	395	966.5	1015.5	18.2	1.7	9.9	3.2	36.1 21	-4.4 14	2	13	-1.1	53	29	-2.1	28	2	0	38	T	1.7	1	18.3	N 22	14	9	7	4.4	82	
WHEELING	390	966.5	1015.5	18.5	0.5	9.5	1.8	36.1 21	-7.8 14	2	15	-1.1	53	29	-2.1	28	2	0	38	T	1.7	1	18.3	N 22	14	8	8	4.7	82	
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WHEELING	390	966.5	1015.5	18.5	0.5	9.5	1.8	36.1 21	-7.8 14	2	15	-1.1	53	29	-2.1	28	2	0	38	T	1.7	1	18.3	N 22	14	8	8	4.7	82	
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WHEELING	390	966.5	1015.5	18.5	0.5	9.5	1.8	36.1 21	-7.8 14	2	15	-1.1	53	29	-2.1	28	2	0	38	T	1.7	1	18.3	N 22	14	8	8	4.7	82	
WHEELING	390	966.5	1015.5	18.5	0.5	9.5	1.8	36.1 21	-7.8 14	2	15	-1.1	53	29	-2.1	28	2	0	38	T	1.7	1	18.3	N 22	14	8	8	4.7	82	
WHEELING	390	966.5	1015.5	18.5	0.5	9.5	1.8	36.1 21	-7.8 14	2	15	-1.1	53	29	-2.1	28	2	0	38	T	1.7	1	18.3	N 22	14	8	8	4.7	82	
WHEELING	390	966.5	1015.5	18.5	0.5	9.5	1.8	36.1 21	-7.8 14	2	15	-1.1	53	29	-2.1	28	2	0	38	T	1.7	1	18.3	N 22	14	8	8	4.7	82	
WHEELING	390	966.5	1015.5	18.5	0.5	9.5	1.8	36.1 21	-7.8 14	2	15	-1.1	53	29	-2.1	28	2	0	38	T	1.7	1	18.3	N 22	14	8	8	4.7	82	
WHEELING	390	966.5	1015.5	18.5	0.5	9.5	1.8	36.1 21	-7.8 14	2	15	-1.1	53	29	-2.1	28	2	0	38	T	1.7	1	18.3	N 22	14	8	8	4.7	82	
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WHEELING	390	966.5	1015.5	18.5	0.5	9.5	1.8	36.1 21	-7.8 14	2	15	-1.1	53	29	-2.1	28	2	0	38	T	1.7	1	18.3	N 22	14	8	8	4.7	82	
WHEELING	390	966.5	10																											



## APRIL 1980

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# HEATING DEGREE DAYS

(Base 65°F.)

APRIL 1980

State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month
	This month	Period July through this month			This month	Period July through this month			This month	Period July through this month			This month	Period July through this month	
ALABAMA				IDAHO				NEBRASKA				TENNESSEE			
BIRMINGHAM U	140	3011	2495	BOISE	367	5059	5484	GRAND ISLAND	420	6224	6201	BRISTOL	285	4416	4208
BIRMINGHAM	144	2874	2824	LEWISTON	274	4699	5148	LINCOLN	387	6029	6030	CHATTANOOGA	215	3632	3454
HUNTSVILLE	178	3591	3270	POCATELLO	507	6205	6589	NORFOLK	423	6482	6741	KNOXVILLE	185	3571	3431
MOBILE	52	1645	1684					NORTH PLATTE	439	6023	6440	MEMPHIS	156	3136	3205
MONTGOMERY	84	2101	2261	ILLINOIS				ORAMA (EPPELEY)	440			NASHVILLE	240	3831	3651
				CAIRO U	217	3947	3795	ORAMA (NORTH)	396	6123	6382	OAK RIDGE	288	4168	3867
ALASKA				CHICAGO O HARE	558	6256	6212	SCOTTSBLUFF	463	6024	6403				
ANCHORAGE	764	8661	10016	MOLINE	481	6446	6191	VALENTINE	495	6798	6954	TEXAS			
ANNETTE	612	5768	6251	PEORIA	474	6279	5901					ARILENE	118	2537	2599
BARROW	2065	16657	17882	ROCKFORD	556	7001	6577	NEVADA				AMARILLO	373	4485	4092
BARTER ISLAND	2038	14377	17706	SPRINGFIELD	421	5637	5414	ELKO	523	5466	6887	AUSTIN	47	1663	1737
BETHEL	1029	11467	12029	INDIANA				ELY	617	6349	7103	BROWNSVILLE	13	655	650
BETTES	1221	13563	14933	EVANSVILLE	367	4959	4529	LAS VEGAS	108	2230	2591	CORPUS CHRISTI	30	916	930
BIG DELTA	775	10981	12861	FORT WAYNE	561	6462	5970	RENO	451	4975	5291	DALLAS FT WORTH	102	2450	2382
COLD BAY	876	8307	8486	INDIANAPOLIS	474	5835	5407	WINNEMUCCA	471	5280	6121	DEL RIO	24	1349	1523
FAIRBANKS	868	11560	13585	SOUTH BEND	482	5803	6182	NEW HAMPSHIRE				EL PASO	157	2708	2678
GULKANA	849	11266	12948	IOWA				CONCORD	610	6888	6987	GALVESTON	28	1311	1224
HOMER	768	8201	9171	DES MOINES	408	6123	6498	MT WASHINGTON OBS	1184	12221	12320	HOUSTON INTERCON	45	1585	1434
JUNEAU	678	7423	8089	DUBUQUE	516	6893	6981					LUCKOCK	205	3362	3516
KING SALMON	852	9670	10459	SIQUO CITY	439	6580	6731	NEW JERSEY				MIDLAND	184	2813	2621
KODIAK	720	6918	7725	WATERLOO	493	6894	7147	ATLANTIC CITY	394	5064	4806	PORT ARTHUR	40	1551	1518
KOTZBUE	1464	13263	14334	KANSAS				ATLANTIC CITY U	376	4381	4498	SAN ANGELO	105	2465	2240
MC GRATH	923	12143	13554	CONCORDIA	381	5533	5449	NEWARK	366	4587	4891	SAN ANTONIO	42	1488	1570
ROME	1229	11856	12804	DOODGE CITY	364	5338	4910	TRENTON U	319	4649	4812	VICTORIA	39	1374	1227
ST. PAUL ISLAND	1016	8383	9463	GOODLAND	534	5865	5848					WACO	119	2363	2058
TALKEETNA	816	9826	10773	TOPA	384	5299	5112	NEW MEXICO				WICHITA FALLS	162	3037	2891
UNALAKLEET				WICHITA	318	4836	4590	ALBUQUERQUE	379	4040	4234	UTAH			
VALDEZ	762	8294	9478	KENTUCKY				ALBUQUERQUE	486	5013	4997	MILFORD	532	5667	6056
YAKUTAT	698	7288	8401	COVINGTON	434	5434	4923	ROSWELL	222	3499	3677	SALT LAKE CITY	371	5003	5658
ARIZONA				LEXINGTON	371	4913	4615	NEW YORK				VERMONT			
FLAGSTAFF	684	6666	6641	LOUISVILLE	342	4634	4535	ALBANY	503	6381	6596	BURLINGTON	550	6953	7482
PHOENIX	35	1040	1552	LOUISIANA				BINGHAMTON	548	6687	6890				
TUCSON	84	1416	1752	BATON ROUGE	44	1898	1670	BUFFALO	559	6303	6548	VIRGINIA			
WINSLOW	391	4566	4595	LAKE CHARLES	48	1663	1498	NEW YORK U	310	4379	4711	LYNCHBURG	255	4243	4148
YUMA	23	545	1005	NEW ORLEANS	38	1494	1465	NEW YORK KENNEDY	387	4936	4987	NORFOLK	196	3469	3435
ARKANSAS				SHREVEPORT	96	2326	2162	NEW YORK LA GUARDIA	350	4675	4764	RICHMOND	135	3618	3875
FORT SMITH	208	3677	3319	MAINE				ROCHESTER	510	6417	6388	ROANOKE	266	4249	4206
LITTLE ROCK	142	3034	3333	CARIBOU	664	8458	8988	SYRACUSE	511	6271	6360	WALLOPS ISLAND	304	4033	4123
NO. LITTLE ROCK	173	3373	3069	PORTLAND	613	6857	7011	NORTH CAROLINA				WASHINGTON			
CALIFORNIA				MARYLAND				ASHEVILLE	258	3968	4123	OLYMPIA	476	5091	4992
BAKERSFIELD	110	1594	2163	BALTIMORE	273	4445	4619	CAPE HATTERAS R	145	2766	2684	QUILLAYUTE	500	4733	5223
BISHOP	352	4101	4130	MASSACHUSETTS				CHARLOTTE	171	3409	3184	SEATTLE	341	3966	4325
BLUE CANYON	568	4894	5082	BLUE HILL OBS R	512	5924	6010	GREENSBORO	212	3791	3766	SEATTLE-TACOMA	395	4318	4705
EUREKA U	386	3196	3997	BOSTON	562	6404	6492	RALEIGH	130	3531	3466	SPOKANE	392	5952	6364
FRESNO	129	2197	2590	WORCESTER				WILMINGTON	120	2654	2426	STAMPEDE PASS R	721	7984	8247
LONG BEACH	99	991	1512	MICHIGAN								WALLA WALLA U	255	4583	4611
LOS ANGELES	143	909	1634	ALPENA	729	7772	7913	NORTH DAKOTA				YAKIMA	336	5567	5676
LOS ANGELES U	79	564	1160	DETROIT	533			BISMARCK	492	8231	8583	WEST VIRGINIA			
MT. SHASTA R	525	5158	5344	DETROIT METRO	568	6501	6139	FAIRBANK	403	6740	6840	BECKLEY	435	5557	5350
OAKLAND	211	1864	2402	FLINT	607	6673	6670	WILLISTON	460	8114	8681	CHARLESTON	349	4748	4467
RED BLUFF	157	2202	2616	GRAND RAPIDS	591	6285	6487					ELKINS	500	5967	5676
SACRAMENTO	164	2545	2703	HOUGHTON LAKE	690	7759	7838	AKRON	520	6096	5960	HUNTINGTON	351	4675	4498
SAN DIEGO	61	547	1376	LANSING	600	6831	6576	CINCINNATI ABBE OB	401	5098	4719	PARKERSBURG U	391	5011	4689
SAN FRANCISCO	269	2334	2712	MUSKEGON	601	6692	6510	CLEVELAND	561	6148	5870				
SAN FRANCISCO U	240	1971	2629	SAULT STE MARIE	711	8531	8497	COLUMBUS	468	6598	5513	WISCONSIN			
SANTA MARIA	252	2048	2644	MINNESOTA				DAYTON	495	5848	5462	GREEN BAY	597	7488	7669
STOCKTON	140	2174	2724	DULUTH	702	8887	9078	MANSFIELD	535	6346	5593	LA CROSSE	480	7077	7154
COLORADO				INTERNATIONAL FALLS	618	9942	9917	TOLEDO	542	6404	6120	MADISON	586	7387	7361
ALAMOSA	798	8052	7998	MINNEAPOLIS	484	7511	7823	YOUNGSTOWN	596	6421	6126	MILWAUKEE	594	6699	7006
COLORADO SPRINGS	615	6095	6069	POCHESTER	543	7588	7857	OKLAHOMA				WYOMING			
DENVER	514	5727	5683	ST CLOUD	529	8342	8459	OKLAHOMA CITY	249	3729	3659	CASPER	617	7198	7020
GRAND JUNCTION	405	5217	5452	MISSISSIPPI				TULSA	154	3527	3652	CHEYENNE	673	6690	6705
PUEBLO	492	5356	5218	MERIDIAN	106	2463	2381	OREGON				LANDER	595	7324	7337
CONNECTICUT				MISSOURI				ASTORIA	459	4088	4646	SHERIDAN	507	7000	7165
BRIDGEPORT	499	5271	5212	COLUMBIA REGIONAL	389	5297	4950	BURNS U	587	6275	6605				
HARTFORD	466	5890	6100	KANSAS CITY	327	5332	5215	EUGENE	421	4258	4317				
DELAWARE				ST JOSEPH	341	5402	5306	MEDFORD	376	4021	4586				
WILMINGTON	307	4733	4812	ST LOUIS	331	4836	4637	PENOLDTON	388	5261	4950				
DIST. OF COLUMBIA				SPRINGFIELD	332	4410	4466	PORTLAND	329	3937	4400				
WASHINGTON DULLES	272	4584	4874	MONTANA				SALEM	423	4329	4424				
WASHINGTON NATIONAL	149	3612	4139	BILLINGS	324	6037	6801	SEXTON SUMMIT R	632	5289	5657				
FLORIDA				GLASGOW	398	7687	8474	PENNSYLVANIA							
APPALEACHICOLA U	54	1430	1361	GREAT FALLS	370	6473	7123	ALLENSTOWN	356	5199	5616				
DAYTONA BEACH	16	889	897	HAVRE	380	7157	8221	ERIE	644	6240	6435				
FORT MYERS	0	347	457	WELLS	473	7117	7595	HARRISBURG	361	5133	5096				
JACKSONVILLE	24	1414	1327	KALISPELL	503	7148	7868	PHILADELPHIA	301	4726	4743				
KEY WEST	0	73	64	MILES CITY	377	6854	7484	PITTSBURGH	500	5892	5696				
MIAMI	0	200	206	MISSOULA	448	6768	7333	SCRANTON	414	5701	6030				
ORLANDO	4	637	733					WILLIAMSPORT	405	5666	5763				
PENSACOLA	47	1529	1578												
TALLAHASSEE	74	1736	1563					RHODE ISLAND							
TAMPA	8	629	718					BLOCK ISLAND	505	4876	5342				
WEST PALM BEACH	2	358	299					PROVIDENCE	459	5363	5677				
GEORGIA								SOUTH CAROLINA							
ATHENS	143	2848	2955					CHARLESTON	82	2224	2141				
ATLANTA	113	2802	3068					CHARLESTON U	37	1792	1904				
AUGUSTA	97	2708	2537					COLUMBIA	147	3008	2586				
COLUMBUS	91	2151	2372					GRNVILLE-SPRTNBGR	199	3280	3134				
MACON	70	2130	2234												
ROME	207							SOUTH DAKOTA							
SAVANNAH	43	1887	1952					ABERDEEN	463	7775	8221				
								HURON	489	7247	7710				
								RAPID CITY	483	6427	6871				
								SIoux FALLS	464	7137	7514				

# COOLING DEGREE DAYS

(Base 65°F.)

APRIL 1980

State and station	Current season			State and station	Current season			State and station	Current season			State and station	Current season		
	This month	Period January through this month	Normal January through this month		This month	Period January through this month	Normal January through this month		This month	Period January through this month	Normal January through this month		This month	Period January through this month	Normal January through this month
ALABAMA				HAWAII				NEBRASKA				SOUTH CAROLINA			
BIRMINGHAM U	26	34	144	HILLO	293	967	769	GRAND ISLAND	20	20	8	CHARLESTON	69	85	118
BIRMINGHAM	25	35	107	HONOLULU	340	1099	972	LINCOLN	13	13	8	CHARLESTON U	100	114	144
HUNTSVILLE	17	17	73	KAHULUI	334	1188	867	NORFOLK	23	23	0	COLUMBIA	47	47	86
MOBILE	89	169	226	LIHUE	261	934	832	NORTH PLATTE	10	10	6	GRNVILLE-SPRTNBRG	27	27	37
MONTGOMERY	43	67	147					OMAHA (EDPLEY)	15	15	6				
				IDAHO				OMAHA (NORTH)	25	25	6	SOUTH DAKOTA			
ALASKA				BOISE	3	3	0	SCOTTSBLUFF	1	1	0	ABERDEEN	16	16	0
ANCHORAGE	0	0	0	LEWISTON	10	10	0	VALENTINE	15	15	0	HURON	18	18	0
ANNETTE	0	0	0	POCATELLO	3	3	0					RAPID CITY	6	6	0
BARROW	0	0	0					NEVADA				SIOUX FALLS	23	23	0
BARTER ISLAND	0	0	0					ELKO	0	0	0				
BETHEL	0	0	0	ILLINOIS				ELY	0	0	0	TENNESSEE			
BETTS	0	0	0	CAIRN U	29	29	51	LAS VEGAS	68	68	104	BRISTOL	6	6	18
BIG DELTA	0	0	0	CHICAGO O HARE	10	10	0	RENO	0	0	0	CHATTANOOGA	8	8	48
COLD BAY	0	0	0	HOLINE	11	11	0	WINNEMUCCA	0	0	0	KNOXVILLE	16	16	56
FAIRBANKS	0	0	0	PEORIA	6	6	0					MEMPHIS	40	40	79
GULKANA	0	0	0	ROCKFORD	6	6	0	NEW HAMPSHIRE				NASHVILLE	17	17	48
HOMER	0	0	0	SPRINGFIELD	10	10	6	CONCORD	0	0	0	OAK RIDGE	6	6	34
JUNEAU	0	0	0					MT WASHINGTON OBS	0	0	0				
KING SALMON	0	0	0	INDIANA								TEXAS			
KODIAK	0	0	0	EVANSVILLE	5	5	25	ATLANTIC CITY U	0	0	0	ABILENE	91	104	139
KOTZEBUE	0	0	0	FORT WAYNE	1	1	0	ATLANTIC CITY U	0	0	0	AMARILLO	4	4	20
MC GRATH	0	0	0	INDIANAPOLIS	3	3	6	NEWARK	0	0	0	AUSTIN	106	184	228
NOME	0	0	0	SOUTH BEND	9	9	0	TRENTON U	0	0	0	BROWNSVILLE	230	573	655
ST. PAUL ISLAND	0	0	0									CORPUS CHRISTI	166	422	437
TALKEETNA	0	0	0	IOWA								DALLAS FT WORTH	52	63	119
UNALASKET	0	0	0	DES MOINES	22	22	0	NEW MEXICO				DEL RIO	206	318	344
VALDEZ	0	0	0	DUBUQUE	11	11	0	ALBUQUERQUE	0	0	6	EL PASO	34	34	62
YANUTAT	0	0	0	SIOUX CITY	24	24	6	CLAYTON	0	0	0	WESTON	99	114	256
				WATERLOO	24	24	0	POSWELL	8	8	26	HOUSTON INTERCON	86	170	252
												LUBBOCK	32	32	49
ARIZONA				KANSAS				NEW YORK				MIDLAND	17	17	94
FLAGSTAFF	0	0	0	CONCORDIA	18	18	10	ALBANY	0	0	0	PORT ARTHUR	69	151	243
PHOENIX	187	194	176	DODGE CITY	18	18	14	BINGHAMTON	0	0	0	SAN ANGELO	73	82	182
TUCSON	109	114	140	GOODLAND	4	4	0	BUFFALO	0	0	0	SAN ANTONIO	127	213	257
WINSLOW	0	0	9	TOPEKA	9	9	22	NEW YORK U	1	1	1	VICTORIA	118	226	306
YUMA	236	240	319	WICHITA	3	3	31	NEW YORK KENNEDY	0	0	0	WACO	49	80	169
								NEW YORK LA GUARDIA	0	0	0	WICHITA FALLS	52	52	113
ARKANSAS				KENTUCKY				ROCHESTER	0	0	0				
FORT SMITH	11	11	63	COVINGTON	0	0	8	SYRACUSE	0	0	0	UTAH			
LITTLE ROCK	42	44	54	LEXINGTON	4	4	21					MILFORD	0	0	0
NO. LITTLE ROCK	50	50	72	LOUISVILLE	8	8	23	NORTH CAROLINA				SALT LAKE CITY	9	9	0
								ASHEVILLE	35	35	17				
CALIFORNIA				LOUISIANA				CAPE HATTERAS R	28	28	34	VERMONT			
BAKERSFIELD	49	55	77	BATON ROUGE	84	139	220	CHARLOTTE	16	16	22	BURLINGTON	0	0	0
BISHOP	0	0	19	LAKE CHARLES	52	101	247	GREENSBORO	45	45	27				
BLUE CANYON	0	0	0	NEW ORLEANS	85	178	255	RALEIGH	71	72	77	VIRGINIA			
EUREKA U	0	2	0	SHREVEPORT	43	56	154	WILMINGTON				LYNCHBURG	15	15	8
FRESNO	39	39	41									NORFOLK	11	11	18
LONG BEACH	33	37	23	MAINE								RICHMOND	25	26	18
LOS ANGELES	15	27	21	CARIBOU	0	0	0	NORTH DAKOTA	8	8	0	ROANOKE	21	21	16
LOS ANGELES U	82	149	59	PORTLAND	0	0	0	BISMARCK	18	18	0	WALLOPS ISLAND	0	0	0
MT SHASTA R	0	0	0					FARGO	7	7	0				
OAKLAND	1	1	0	MARYLAND				WILLISTON				WASHINGTON			
RED BLUFF	19	19	53	BALTIMORE	0	0	0					OLYMPIA	0	0	0
SACRAMENTO	8	8	26					OHIO				QUILLAYUTE	0	0	0
SAN DIEGO	35	53	25	MASSACHUSETTS				AKRON	0	0	0	SEATTLE	0	0	0
SAN FRANCISCO	0	0	0	BLUE HILL OBS R	0	0	0	CINCINNATI ABBE OB	2	2	17	SEATTLE-TACOMA	0	0	0
SAN FRANCISCO U	5	5	0	BOSTON	0	0	0	CLEVELAND	0	0	0	SPOKANE	1	1	0
SANTA MARIA	3	3	0	WCRESTER	0	0	0	COLUMBUS	0	0	0	STAMPEDE PASS R	0	0	0
STOCKTON	16	18	22					DAYTON	0	0	5	WALLA WALLA U	12	12	10
				MICHIGAN				MANSFIELD	0	0	0	YAKIMA	2	2	0
COLORADO				ALPENA	0	0	0	TOLEDO	3	3	0				
ALAMOSA	0	0	0	DETROIT	6	6	0	YOUNGSTOWN	0	0	0	WEST INDIES			
COLORADO SPRINGS	0	0	0	DETROIT METRO	3	3	0					SAN JUAN P.R.	479	1741	1335
DENVER	2	2	0	FLINT	3	3	0	OKLAHOMA	7	7	53				
GRAND JUNCTION	1	1	0	GRAND RAPIDS	6	6	0	OKLAHOMA CITY	43	43	60	WEST VIRGINIA			
PUEBLO	1	1	6	HOUGHTON LAKE	2	2	0					BECKLEY	4	4	0
				LANSING	4	4	0	OREGON				CHARLESTON	6	6	21
CONNECTICUT				MUSKEGON	1	1	0	ASTORIA	0	0	0	ELKINS	0	0	0
BRIDGEPORT	0	0	0	SAULT STE MARIE	0	0	0	BURNS U	0	0	0	HUNTINGTON	10	10	21
HARTFORD	0	0	0					EUGENE	0	0	0	PARKERSBURG U	0	0	8
				MINNESOTA				WEDFORD	0	0	0				
DELAWARE				DULUTH	0	0	0	PENDLETON	2	2	0	WISCONSIN			
WILMINGTON	0	0	0	INTERNATIONAL FALLS	2	2	0	PORTLAND	1	1	0	GREEN BAY	5	5	0
				MINNEAPOLIS	16	16	0	SALEM	0	0	0	LA CROSSE	20	20	0
DIST. OF COLUMBIA				ROCHESTER	14	14	0	SEXTON SUMMIT R	0	0	0	MADISON	8	8	0
WASHINGTON DULLES	0	0	0	ST CLOUD	6	6	0					MILWAUKEE	9	9	0
WASHINGTON NATIONAL	9	9	7					PACIFIC AREA							
				MISSISSIPPI				GUAM TAGUAC R	434	1556	1539	WYOMING			
FLORIDA				JACKSON	28	50	163	JOHNSTON	442	1661	1426	CASPER	0	0	0
APPALACHICOLA U	73	108	221	HERRIDIAN	35	61	159	KOROR R	509	1968	1948	CHEYENNE	0	0	0
DAYTONA BEACH	135	299	340					KWAJALEIN	515	2120	1983	LANDER	0	0	0
FORT MYERS	237	629	606	MISSOURI				MAJURO	507	2017	1929	SHERIDAN	2	2	0
JACKSONVILLE	122	201	238	COLUMBIA REGIONAL	13	13	27	PAGO PAGO	530	2075	1853				
KEY WEST	387	1023	1099	KANSAS CITY	21	21	12	PONAPE R	530	2106	1885				
MIAMI	321	830	778	ST JOSEPH	15	15	0	TRUM MOEN ISLAND	531	2048	1941				
ORLANDO	172	393	462	ST LOUIS	23	23	26	WAKE	446	1590	1501				
OKLAHOMA	72	135	247	SPRINGFIELD	3	3	29	YAP R	510	1958	1908				
TALLAHASSEE	56	117	223												
TAMPA	165	396	487	MONTANA											
WEST PALM BEACH	213	543	664	BILLINGS	20	20	0	PENNSYLVANIA							
				GLASGOW	12	12	0	ALLENTOWN	0	0	0				
GEORGIA				GREAT FALLS	12	12	0	ERIE	0	0	0				
ATHENS	30	13	49	HAYRE	2	2	0	HARRISBURG	0	0	0				
ATLANTA	45	47	39	HELENA	0	0	0	PHILADELPHIA	0	0	0				
AUGUSTA	50	52	91	KALISPELL	6	6	0	PITTSBURGH	0	0	0				
COLUMBUS	19	55	124	MILES CITY	22	22	0	SCRANTON	0	0	0				
MACON	54	69	149	MISSOULA	6	6	0	WILLIAMSPORT	0	0	0				
ROME	13	14													
SAVANNAH	87	122	168					RHODE ISLAND							
								BLOCK ISLAND	0	0	0				
								PROVIDENCE	0	0	0				



# STORM SUMMARY

APRIL 1980

STATE	TORNADOES					HAILSTORMS				WINDSTORMS				LIGHTNING				@HEAVY SNOWSTORMS AND BLIZZARDS				# ICE STORMS				φ ALL OTHER			
	NUMBER	DAYS	DEATHS	INJURIES	† DAMAGE	DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE	
								PROP.	CROPS			PROP.	CROPS			PROP.	CROPS			PROP.	CROPS			PROP.	CROPS			PROP.	CROPS
Alabama	9	4		14	6			3				4														3	20	7	7
Alaska												4														2		5	
Arizona											23	7				5													
Arkansas	16	2		106	7			?								5													
California	*																												
Colorado	1	1										3						1	7	?									
Connecticut																4										1	3	7	
Delaware	5	4		10	6			5	6	3		5		9		3													
Florida	12	5		7	6							3																4	?
Georgia																													
Hawaii	*											5																	
Idaho												4	?			3													
Illinois	2	1		4							1	5																	
Indiana	6	1		5				4																					
Iowa	*																												
Kansas																													
Kentucky	4	1	2	15	5			4	4			4	3																
Louisiana	4	2		2	6			5	?	2		5	?			5													
Maine																													
Maryland & DC	1	1		4		6	6									4												5	6
Massachusetts																													
Michigan	3	2			5					2		4		1														5	
Minnesota												3																5	6
Mississippi	9	3	1	33	7			?	?							5												7	?
Missouri	3	1		18	6			4	3			5	3			3	3												
Montana	*																												
Nebraska																													
Nevada	*																												
New Hampshire																													
New Jersey																													
New Mexico	1	1										5	?																
New York																													
North Carolina	2	2			5																					1	?	?	?
North Dakota																													
Ohio	12	2		21	6			5			6	5																5	
Oklahoma	7	4		15	6			6	6	2	6	5				5	5												
Oregon	*																												
Pacific	†																												
Pennsylvania	1	1			5			3				3				3													
Puerto Rico	*																												2
Rhode Island	*																												
South Carolina	1	1		5	6			4				4																	
South Dakota	*																												
Tennessee	4	1		1	5			4	?	1	6	?				4													
Texas	26	5	1	10	6	5		8	7	1	6	5				5										2		6	5
Utah	*																												
Vermont	*																												
Virgin Islands	*																												
Virginia	3	3		1	5			6	5			5		1		4											1		6
Washington												5				5													5
West Virginia																													
Wisconsin	5	1		22	6			3	5	1	5					4												3	?
Wyoming	*																												

## Average monthly values

APRIL 1980

BOISE, ID										BOOTHVILLE, LA										*	BROWNSVILLE, TX										BUFFALO, NY										CAMPE HATTERAS, NC									
915 MB										1014 MB											1014 MB										987 MB										1014 MB									
SFC	30	671	6.8	-6	13	1-5	29	1	16.7	14.2	30	1-1	30	7	18.2	15.6	16	20	30	218	4.2	1-2	20	1-5	30	4	13.4	10.6	28	-8																				
1000	30	1,976	6.8	-5.3	27	4-9	118	17.8	13.2	28	1-7	29	118	19.3	15.2	15	3.1	30	528	4.9	-1.0	23	2-9	30	124	15.5	9.1	25	1-5																					
950	30	2,499	2	-8.1	27	2-8	29	558	16.8	8.3	23	2-9	30	555	17.5	10.4	16	6.8	30	967	3.1	-3.6	25	3-9	1,012	11.0	2.2	26	5.0																					
900	30	1,005	W.C.	-5.5	13	1-3	29	1,016	13.7	4.1	23	3-8	30	1,017	17.0	2.5	18	4.9	30	967	3.1	-3.6	25	3-9	1,012	11.0	2.2	26	5.0																					
850	30	1,478	W.C.	-3.3	25	4-9	149	14.96	11.2	1.4	24	5-1	30	1,504	15.6	-3.21	3.2	30	1,429	9	-6.0	27	4-9	1,487	7.9	-1.9	16	6.2																						
800	30	1,976	6.8	-5.3	27	4-9	118	17.8	13.2	28	1-7	29	118	19.3	15.2	15	3.1	30	1,915	1.4	-7.8	27	5-5	1,985	5.4	-6.1	7.5																							
750	30	2,499	2	-8.1	27	2-8	29	2,534	10.2	-2.54	24	9-2	30	2,556	10.0	-6.7	26	5.1	30	2,427	-3.0	-11.1	27	30	2,510	3.1	-10.26	9.4																						
700	30	3,049	-2.9	-11.0	26	1-8	29	3,098	4.2	-11.1	26	11-2	30	3,126	7.3	-10.9	26	3.9	2,970	-6.1	-16.1	27	7-6	3,066	-2	-14.6	26	10.4																						
650	30	3,633	-6.8	-15.0	25	4-5	29	3,697	-6	-15.4	26	12-3	30	3,732	3.4	-13.7	26	8.8	3,547	-8.8	-20.6	26	8-8	3,657	-3.3	-18.4	26	12.3																						
600	30	4,253	-11.0	-18.9	24	5-7	28	4,333	-3.8	-19.7	27	14-0	30	4,376	-1.3	-17.0	26	11.9	4,163	-12.4	-24.0	26	10-3	4,285	-7.1	-22.3	26	13.8																						
550	30	4,916	-15.4	-24.7	24	6-6	28	5,015	-8.1	-24.1	27	16-1	30	5,063	-6.8	-19.9	7.6	14.1	4,822	-16.6	-28.5	26	11-7	4,958	-11.4	-26.8	26	15.7																						
500	30	5,629	-20.3	-30.1	25	7-8	28	5,748	-13.1	-29.3	27	18-1	30	5,781	-12.0	-25.4	27	16.7	5,532	-21.3	-33.4	26	13-8	5,682	-16.4	-31.7	26	17.2																						
450	30	6,401	-25.6	-35.5	25	8-9	27	6,504	-18.4	-33.4	27	19-5	30	6,598	-11.1	-31.0	27	19.4	6,301	-26.8	-38.6	26	14-9	6,466	-21.8	-35.9	25	18.9																						
400	30	7,244	-32.0	-40.2	26	8-8	28	7,411	-24.6	-39.6	27	21-8	30	7,470	-23.5	-35.1	26	22.3	7,141	-32.7	-44.1	26	17-3	7,322	-27.9	-40.9	26	20.8																						
350	30	8,177	-38.9	-43.8	26	10-1	27	8,369	-31.9	-44.9	27	24-7	30	8,436	-30.5	-42.2	26	26.3	8,071	-39.5	-47.9	26	18-3	8,271	-34.9	-46.4	26	24.7																						
300	30	9,215	-46.4	-50.6	26	10-9	27	9,437	-39.8	-50.8	27	28-0	30	9,511	-38.4	-48.6	27	33.4	8,910	-46.5	-54.5	26	19-4	9,326	-42.9	-48.4	26	27.3																						
250	29	10,399	-53.5	-57.3	26	12-5	27	10,660	-48.4	-54.4	27	31-8	30	10,740	-47.2	-49.2	27	39.4	9,810	-52.6	-60.6	26	21-9	10,533	-51.8	-58.4	26	31.4																						
200	30	11,819	-57.1	-61.3	27	10-8	28	12,103	-52.4	-58.4	27	33-3	30	12,186	-50.4	-52.4	27	42.4	11,286	-57.6	-65.6	26	19-6	12,084	-56.6	-63.6	27	11.4																						
175	27	12,667	-56.5	-55.5	27	10-3	27	12,947	-58.7	-60.7	27	36-5	30	13,076	-60.5	-62.5	27	47.4	12,195	-52.8	-60.8	28	17-0	12,815	-55.7	-62.7	27	30.2																						
150	27	13,667	-55.6	-55.6	27	9-9	27	13,911	-60.7	-62.7	27	31-3	29	13,977	-63.8	-65.8	27	36.3	13,190	-52.8	-60.8	28	14-7	13,795	-56.9	-63.9	27	26.4																						
125	27	14,806	-56.8	-56.8	27	9-6	27	15,039	-63.8	-65.8	27	29-0	29	15,087	-67.0	-69.0	27	29.2	14,762	-54.4	-62.4	28	13-1	14,944	-59.4	-66.4	26	22.4																						
100	27	16,218	-57.6	-57.6	26	7-4	27	16,398	-68.2	-70.2	27	23-0	26	16,425	-70.6	-72.6	27	21.1	16,186	-55.2	-63.2	27	10-8	16,333	-60.8	-67.8	27	18.4																						
80	27	17,624	-58.6	-58.6	27	9-6	27	17,748	-68.9	-70.9	27	13-6	20	17,732	-71.8	-73.8	27	13.4	17,608	-55.4	-63.4	27	7-5	17,717	-61.4	-68.4	27	11.4																						
60	27	18,464	-58.2	-58.2	27	10-5	27	18,552	-65.2	-67.2	27	18-5	27	18,552	-70.2	-72.2	27	16.4	18,464	-58.2	-66.2	27	19-6	18,544	-58.2	-66.2	27	7.6																						
40	26	19,429	-58.6	-58.6	29	1-1	27	19,504	-82.5	-84.5	26	5-8	17	19,456	-65.0	-67.0	26	14.4	19,439	-55.1	-63.1	28	4-6	19,511	-59.5	-67.5	27	4.6																						
30	26	20,576	-58.1	-58.1	03	1-8	27	20,633	-80.9	-82.9	09	9-15	20,585	-62.8	-64.8	19	7	20,202	-60.2	-68.2	27	3-4	20,655	-57.9	-65.9	27	1.8																							
20	23	21,997	-57.3	-57.3	06	1-9	27	22,026	-58.9	-60.9	07	2-7	13	21,976	-59.3	-61.3	06	4.3	22,026	-55.4	-63.4	28	1-9	22,065	-56.9	-64.9	28	1.1																						
10	23	22,820	-56.0	-56.0	07	2-4	27	22,852	-54.2	-56.2	08	5-7	13	22,797	-55.6	-57.6	07	7.1	22,864	-54.4	-62.4	01	1-9	23,895	-54.5	-62.5	07	3.0																						
5	23	24,987	-55.1	-55.1	05	2-5	27	25,028	-51.6	-53.6	08	5-6	13	24,974	-51.2	-53.2	09	4.4	25,011	-51.4	-59.4	01	1-4	25,068	-51.5	-59.5	07	2.7																						
0	16	26,409	-54.2	-54.2	07	1-3	27	26,489	-71.7	-73.7	09	5-6	12	26,489	-71.7	-73.7	08	8.4	26,474	-51.4	-59.4	11	1-9	26,512	-50.2	-58.2	08	2.7																						
15	14	28,260	-51.8	-51.8	01	1-3	23	28,403	-83.4	-85.4	09	5-6	12	28,363	-81.8	-83.8	09	8.0	28,258	-75.2	-83.2	26	1-9	28,405	-86.4	-94.4	10	7																						
10	5	30,978	-45.0	-45.0		8	31,213	-37.8	-39.8		5	31,179	-35.1	-37.1		13	31,035	-42.8	-50.8		14	31,090	-40.8	-48.8	26	1.4																								



# RAWINSONDE DATA

Average monthly values

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CARIBOU, ME 991 MB												CENTREVILLE, AL 999 MB												CHARLESTON, SC 1013 MB												CHATHAM, MA 1013 MB												CHIHUAHUA, MEXICO 857 MB																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
Standard pressure surface mb.		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Direction tens of deg		Speed m.p.h.		Direction tens of deg		Speed m.p.h.		Direction tens of deg		Speed m.p.h.		Direction tens of deg		Speed m.p.h.		Direction tens of deg		Speed m.p.h.		Direction tens of deg		Speed m.p.h.		Direction tens of deg		Speed m.p.h.		Direction tens of deg		Speed m.p.h.		Direction tens of deg		Speed m.p.h.		Direction tens of deg		Speed m.p.h.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
SFC	30	191	1.8	-3.8	33	1.0	30	140	10.9	8.8	32	-6	30	13	13.8	10.8	22	-8	30	16	6.3	4.2	06	1.0	30	1	1.428	10.0	-3.5	24	1.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											



## Average monthly values

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Average monthly values:

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KING SALMON, AK 923 MB							KOPOR, CAROLINE IS. 1007 MB							KOTZEBUE, AK 1005 MB							LAKE CHARLES, LA 1014 MB							LANDER, WY 829 MB						
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction true of deg.	Resultant Wind Speed m.p.a.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction true of deg.	Resultant Wind Speed m.p.a.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction true of deg.	Resultant Wind Speed m.p.a.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction true of deg.	Resultant Wind Speed m.p.a.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction true of deg.	Resultant Wind Speed m.p.a.				
15FC	30	15	4	-4.2	06	1.9	30	27.8	25.0	06	3.0	28	30	29.6	24.6	06	1.7	29	5	14.2	13.1	25	3	30	1,697	2.0	-4.9	27	1.7					
15C	30	4.1	1.2	-4.4	10	4.2	30	543	23.4	21.9	07	6.1	28	468	-5.3	-10.4	09	5.9	561	15.7	6.3	25	3.2	30	1,986	4.2	-8.0	29	2.2					
900	30	802	-2.1	-6.7	10	5.0	30	1,015	20.7	18.4	08	6.3	28	800	-7.1	-12.2	10	4.9	1,018	13.5	5.0	25	3.6	30	2,599	1.1	-10.6	30	2.9					
850	30	1,253	-5.1	-9.8	11	6.2	30	1,509	18.4	14.6	08	6.8	28	1,315	-8.7	-13.9	11	4.2	1,498	11.2	3.0	26	4.2	30	1,061	-2.7	-13.2	31	4.4					
800	30	1,727	-8.3	-14.0	12	6.2	30	2,029	16.1	9.8	09	5.8	27	1,782	-11.2	-17.0	12	4.1	2,002	8.8	-4.8	27	8.0	30	3,644	-6.9	-15.7	31	4.0					
750	30	2,225	-14.4	-18.2	12	6.0	30	2,577	13.9	4.6	08	4.1	27	2,275	-14.1	-20.5	12	4.1	2,533	6.2	-9.1	27	10.1	30	4,263	-11.3	-19.8	31	4.6					
700	30	2,751	-15.2	-22.8	12	6.1	30	3,150	10.9	7.0	8	5.2	27	2,875	-15.5	-25.8	12	4.2	2,936	3.3	-12.9	27	12.3	30	5,637	-15.8	-29.4	31	4.4					
650	30	3,306	-19.9	-27.5	12	6.6	30	3,771	7.6	-3.2	09	5.5	27	3,346	-21.0	-30.5	13	4.4	3,693	-9.2	-18.4	27	14.8	30	7,248	-32.6	-41.9	29	6.1					
600	30	3,897	-23.3	-30.9	12	6.5	30	4,427	3.7	-5.8	09	6.0	27	3,933	-24.9	-34.7	13	4.8	4,328	-4.3	-22.8	27	13.4	30	8,926	-15.8	-29.4	31	4.4					
550	30	4,529	-27.4	-34.4	12	6.5	30	5,129	-1.1	-10.5	09	6.1	27	4,560	-29.4	-39.3	15	4.6	5,008	-9.0	-26.4	27	14.8	30	10,398	-53.9	-30	10.6						
500	30	5,208	-32.1	-38.6	13	7.1	30	5,887	-4.1	-15.7	09	6.7	27	5,233	-34.5	-44.0	15	4.5	5,738	-14.3	-30.7	27	17.5	30	11,818	-56.8	-29	10.0						
450	30	5,945	-37.1	-41.6	13	7.0	30	6,711	-8.6	-23.1	09	7.2	27	5,962	-39.8	-46.1	16	4.2	6,528	-19.8	-35.8	27	19.7	30	13,650	-55.5	-29	10.3						
400	30	6,749	-42.9	-47.3	13	7.0	30	7,615	-14.2	-28.8	08	5.9	25	6,757	-44.8	-51.1	16	4.5	7,392	-25.8	-39.5	26	23.6	30	15,178	-39.8	-46.0	29	6.1					
350	30	7,640	-49.0	-54.6	14	7.0	30	8,618	-20.8	-35.8	08	4.5	25	7,643	-49.8	-56.1	16	5.6	8,348	-32.8	-45.4	26	26.1	30	16,820	-56.9	-30	9.1						
300	30	8,674	-52.6	-58.2	14	7.0	30	9,736	-29.4	-42.8	0	1.6	25	8,639	-53.5	-59.8	17	6.0	9,413	-40.5	-50.7	27	29.8	30	19,211	-47.4	-30	8.0						
250	30	9,821	-50.6	-60.0	14	5.8	30	11,011	-39.6	-50.6	14	2.0	25	9,816	-51.2	-57.5	17	4.6	10,633	-38.6	-48.9	27	32.4	30	20,398	-53.9	-30	10.6						
200	30	11,293	-46.7	-57.0	18	4.9	25	12,496	-52.3	-57.3	17	2.8	25	11,281	-47.5	-53.8	16	3.8	12,076	-55.7	-57.7	27	35.6	30	21,818	-56.8	-29	10.0						
150	30	13,207	-40.6	-50.0	19	4.1	28	14,294	-67.2	-61.2	21	1.1	25	13,292	-46.0	-52.3	16	3.4	13,888	-60.3	-57.9	27	31.2	30	23,650	-55.5	-29	10.3						
125	30	14,421	-45.6	-56.0	19	4.4	28	15,374	-74.5	-69.5	36	1.4	25	14,406	-45.5	-51.8	16	4.1	15,120	-63.4	-58.4	27	27.0	30	24,809	-56.9	-30	9.1						
100	30	15,907	-46.6	-56.0	19	4.3	28	16,647	-81.9	-76.9	33	3.5	25	15,891	-46.4	-52.7	16	3.7	16,378	-66.0	-60.0	27	22.3	29	26,128	-57.8	-29	7.9						
80	30	17,382	-47.1	-57.0	19	3.5	26	17,896	-81.7	-76.7	08	5.2	25	17,371	-47.0	-53.3	16	3.2	17,728	-66.9	-61.9	27	14.7	27	27,621	-58.5	-30	6.3						
70	30	18,264	-48.7	-58.0	18	3.5	26	18,655	-76.6	-71.6	08	8.7	25	18,255	-47.6	-53.9	16	3.1	18,538	-65.5	-60.5	27	8.3	26	28,464	-58.4	-31	8.8						
60	30	19,279	-48.4	-58.4	16	3.2	24	19,556	-78.0	-73.0	09	14.8	25	19,273	-48.0	-54.3	17	2.8	19,920	-63.7	-58.7	27	4.2	26	29,433	-58.4	-32	2.5						
50	30	20,478	-48.6	-58.6	16	2.7	25	20,653	-65.0	-60.0	09	18.6	25	20,476	-48.1	-54.4	15	2.3	20,608	-60.7	-55.7	24	2.3	26	30,580	-58.2	-32	1.7						
40	30	21,940	-49.6	-59.6	14	2.4	25	22,038	-57.8	-52.8	09	10.0	25	21,945	-48.6	-54.9	12	1.9	22,006	-59.0	-54.0	26	1.1	23	31,993	-56.8	-35	1.6						
30	30	23,819	-50.6	-60.6	09	2.4	24	23,878	-51.5	-46.5	30	1.9	24	23,833	-49.3	-45.3	10	1.8	24,262	-55.2	-50.2	07	2.8	21	32,822	-55.6	-34	2.8						
25	25	25,011	-51.1	-61.1	08	3.4	24	25,068	-49.8	-44.8	26	4.2	24	25,028	-49.9	-45.9	08	2.6	24,997	-52.5	-47.5	07	4.5	20	34,995	-54.3	-35	4.0						
20	26	26,467	-51.4	-61.4	07	3.4	22	26,550	-47.3	-42.3	27	6.7	20	26,440	-50.4	-45.4	06	3.8	26,451	-48.9	-43.9	09	3.9	19	36,220	-52.8	-36	3.0						
15	26	26,365	-49.9	-59.9	05	3.9	16	26,375	-49.9	-44.9	27	6.6	15	26,391	-49.7	-44.7	05	7.1	26,361	-44.7	-39.7	13	1.8	17	38,297	-54.8	-37	1.0						
10	14	31,043	-45.8	-55.8	04	3.1	13	31,259	-37.9	-32.9	13	11	31	31,092	-39.3	-34.3	04	13	31,092	-39.3	-34.3	04	13	31,092	-39.3	-34.3	04	13						

* LINH KAUAI, HI 1016 MB										LITTLE ROCK, AR 994 MB										LONGVIEW, TX 1001 MB										MCGRATH, AK 987 MB										* MAJURO, MARSHALL IS. 1010 MB									
5FC	30	36	-22.3	18.7	05	8.1	30	79	11.2	5.9	32	1.8	30	124	12.1	8.6	27	1.0	30	103	-1.3	-6.5	04	4	30	3	29.0	28.5	07	4.3																			
1000	30	171	21.4	17.9	06	7.7						18	159	12.5	5.7	29	1.7							4	30	541	23.9	23.6	07	5.0																			
950	30	615	17.8	16.5	06	9.8	30	550	12.2	3.4	30	4.0	30	562	13.5	4.7	29	3.2	30	411	-7.2	-7.7	08	2.9	30	695	23.7	21.8	07	7.0																			
900	30	1,076	14.5	13.3	06	9.1	30	1,002	10.3	-7.8	30	4.7	30	1,016	11.8	-2.7	27	3.7	30	483	-1.7	-1.1	10	2.9	30	1,011	21.1	17.9	07	6.7																			
850	30	1,558	11.1	10.6	07	8.2	30	1,471	9.7	-2.3	29	5.0	30	1,493	-2.2	-4.0	28	4.4	30	1,297	-3.8	-10.8	12	4.2	30	1,152	16.0	14.1	08	5.8																			
800	30	2,063	10.1	1.1	08	7.7	30	1,972	4.6	-5.8	29	5.0	30	1,993	7.2	-6.4	28	6.0	30	1,772	-7.5	-13.3	12	4.3	30	2,031	16.5	10.2	08	3.8																			
750	30	2,599	9.2	-8.5	08	6.2	30	2,496	2.2	-9.4	28	7.3	30	2,522	4.8	-9.5	29	7.8	30	2,271	-11.4	-16.3	13	4.3	30	2,579	14.1	6.3	08	3.1																			
700	30	3,168	8.8	-12.9	08	4.5	30	3,051	-3.3	-14.4	28	8.5	30	3,082	1.9	-14.1	29	9.0	30	2,796	-15.1	-21.9	15	5.5	30	3,160	11.2	1.6	10	2.0																			
650	30	3,773	3.5	-16.5	08	3.7	30	3,640	-3.7	-18.6	28	10.8	30	3,675	-1.8	-18.5	28	9.9	30	3,352	-19.1	-26.1	16	8.1	30	3,776	7.9	-3.3	09	1.8																			
600	30	4,479	3.1	-19.6	08	3.4	30	4,268	-7.5	-23.0	28	12.6	30	4,307	-2.3	-22.2	28	13.0	30	3,985	-23.6	-30.6	16	7.2	30	4,432	4.2	-8.4	10	1.6																			
550	30	5,113	3.1	-22.9	07	2.9	30	4,931	-10.7	-26.1	27	15.3	30	4,982	-10.7	-26.1	27	13.9	30	4,574	-27.9	-35.0	16	7.7	30	5,136	5.5	-9.1	11	1.1																			
500	30	5,858	-8.4	-27.5	22	2	30	5,661	-17.1	-31.1	28	14.6	30	5,708	-16.1	-31.2	27	15.5	30	5,253	-32.8	-40.5	16	7.7	30	5,896	-3.8	-13.7	10	2.1																			
450	30	6,667	-13.8	-31.4	28	9	30	6,443	-22.7	-36.6	28	15.8	30	6,493	-21.8	-35.1	27	17.7	30	5,987	-38.0	-44.2	16	7.7	30	6,720	-8.6	-18.8	08	1.1																			
400	30	7,551	-20.4	-36.1	29	3.8	30	7,296	-29.1	-42.4	28	17.8	30	7,349	-27.9	-41.6	27	20.8	30	6,788	-43.5	-48.0	16	6.7	30	7,625	-14.1	-25.8	19	2.4																			
350	30	8,528	-27.6	-41.6	29	7.4	29	8,240	-36.5	-48.6	27	19.3	30	8,298	-34.7	-46.4	27	23.3	29	7,674	-49.1		15	6.7	30	8,628	-21.0	-31.6	21	9.9																			
300	30	9,616	-35.3	-48.5	29	14.8	29	9,286	-44.6	-50.9	27	21.5	30	9,342	-42.5	-51.6	27	23.3	29	8,988	-51.6		16	6.4	30	11,022	-39.8	-49.9	20	6.5																			
250	30	10,807	-43.6	-56.0	29	34.8	29	11,915	-56.0		27	30.3	30	12,000	-55.8		27	36.8	29	11,315	-64.8		17	5.4	30	12,509	-52.0	19	9.0																				
200	30	12,331	-53.3		29	36.0	29	12,764	-56.0		27	30.0	30	12,847	-56.8		27	35.8	29	12,201	-64.3		17	5.5	10	13,361	-58.9		18	5.3																			
175	30	14,132	-64.7		29	31.2	29	13,742	-57.8		27	27.2	30	13,820	-58.8		27	28.8	29	13,227	-65.8		17	5.7	30	14,310	-67.0		19	5.6																			
150	30	15,317	-69.2		29	22.7	29	14,890	-59.4		27	22.2	30	14,958	-61.7		27	25.0	29	14,441	-65.7		17	4.9	30	15,390	-74.8		16	2.6																			
125	30	16,502	-74.5		30	13.6	29	16,261	-61.3		28	16.4	30	16,332	-64.0		27	17.8	29	15,928	-64.1		16	5.1	16	16,746	-68.5		13	1.7																			
100	30	17,835	-74.8		30	8.2	29	17,661	-62.1		28	11.1	29	17,700	-64.0		28	11.1	29	17,409	-67.0		17	3.6	30	17,906	-81.5		08	4.1																			
75	30	18,614	-72.4		30	4.0	29	18,488	-61.8		28	8.5	29	18,519	-63.5		28	7.6	29	18,293	-67.5		16	3.7	30	18,667	-76.0		08	6.7																			
60	29	19,530	-67.3		31	1.2	29	19,445	-60.8		28	5.7	28	19,469	-62.0		27	4.5	29	19,311	-67.9		15	3.4	30	19,568	-71.4		08	12.4																			
50	28	20,636	-61.4		30	2.0	28	20,585	-58.7		28	2.2	28	20,604	-59.4		28	2.3	29	20,512	-68.3		15	3.6	30	20,662	-65.5		08	18.4																			
40	28	22,031	-67.7		30	3.6	29	21,990	-57.6		31	9.2	28	22,004	-58.2		08	2.0	29	21,988	-67.7		10	2.6	30	22,065	-67.7		08	10.0																			
30	28	23,613	-57.8		30	7.8	29	23,617	-57.8		31	9.2	28	23,617	-57.8		08	2.0	29	23,617	-57.8		10	2.6	30	23,617	-57.8		08	10.0																			
25	27	24,974	-50.5		08	7.2	24	24,986	-53.2		08	1.9	27	25,000	-52.4		08	4.2	28	25,054	-50.5		08	3.0	28	25,076	-45.9		27	5.8																			
20	26	26,419	-54.7		08	7.3	28	26,430	-50.4		36	4.2	26	26,455	-48.7		07	2.4	26	26,511	-51.3		08	3.0	27	26,553	-45.9		27	7.3																			
15	25	28,313	-46.4		08	7.9	26	28,317	-46.7		26	3.0	24	28,359	-44.6		12	1.8	26	28,385	-50.4		07	4.1	14	28,478	-42.5		26	7.2																			
10	18	31,343	-40.2		08	7.9	19	31,036	-40.6		27	8.8	16	31,135	-37.7		30	3.1	18	31,068	-48.0		06	5.1																									

MEFOFO, OR 910 MB										MERIDA, MEXICO 1012 MB										MIDLAND, TX 915 MB										MONTERREY, MEXICO 963 MB										MONETT, MO 963 MB				
SFC	30	401	8.1	3.3	30	.8	30	11	20.4	18.4	10	1.0	30	874	7.1	-1.7	30	.3	28	423	16.3	10.3	28	.6	30	438	7.7	3.9	21	.5														
950	30						30	116	21.7	17.8	11	2.9																																
1000	30	572	7.3	3.0	27	.8	30	561	19.8	15.9	13	7.9												.5	30	549	8.8	3.9	27	1.2														
950	30	1,017	6.4	.3	21	1.6	30	1,027	19.0	10.1	16	4.7	30	1,011	12.0	-7.7	16	.7	28	1,024	16.4	8.9	11	.6	30	999	9.0	.4	28	3.5														
850	30	1,484	8.1	-2.0	21	7.2	30	1,511	19.7	5.0	18	2.3	30	1,490	12.7	-4.7	18	1.9	28	1,510	17.1	3.5	18	1.3	30	1,470	9.0	-3.5	29	4.4														
800	30	1,975	1.8	-6.1	22	3.5	30	2,033	14.9	1.9	24	2.9	30	1,995	9.6	-7.5	29	2.5	28	2,023	13.4	-5.5	24	3.0	30	1,966	4.1	-7.2	25	5.5														
750	30	2,493	-3.0	-9.2	23	5.5	30	2,577	12.5	-3.2	25	3.8	30	2,528	8.4	-9.7	28	4.3	28	2,563	10.7	-3.8	26	6.4	30	2,488	1.0	-10.7	30	6.6														
700	30	3,041	-1.7	-15.2	24	8.8	30	3,152	9.4	-8.0	24	3.0	30	3,089	2.2	-12.9	28	6.0	28	3,135	7.6	-8.5	27	7.1	30	3,040	-1.8	-15.1	29	8.6														
650	30	3,624	-6.6	-20.0	24	8.0	30	3,762	5.6	-11.1	26	4.0	30	3,683	-1.6	-15.7	27	8.5	28	3,742	3.7	-12.6	27	8.2	30	3,627	-4.8	-18.4	29	9.7														
600	30	4,244	-10.5	-23.9	25	8.8	30	4,412	1.4	-15.3	28	5.4	30	4,316	-6.0	-19.6	27	10.0	28	4,386	-1.0	-15.8	26	10.0	30	4,252	-8.6	-21.6	29	10.8														
550	30	4,902	-14.0	-28.1	25	10.1	30	5,051	-2.2	-19.6	30	6.5	30	4,890	-12.7	-24.4	27	12.5	28	5,010	-1.7	-16.1	25	13.3	30	4,821	-10.0	-25.5	29	14.4														
500	30	5,623	-19.6	-33.5	25	11.2	30	5,854	-8.8	-22.9	27	9.8	30	5,717	-15.7	-30.2	27	15.0	28	5,813	-11.2	-23.2	26	15.6	30	5,640	-18.0	-30.2	28	13.6														
450	30	6,397	-25.3	-38.5	25	12.2	30	6,665	-12.8	-27.8	27	13.5	30	6,503	-23.1	-35.5	27	16.6	28	6,614	-16.5	-29.2	26	17.2	29	6,422	-23.4	-35.5	28	15.3														
400	30	7,242	-31.1	-43.5	26	14.7	30	7,553	-18.7	-31.4	26	16.4	30	7,361	-27.8	-41.0	27	19.7	28	7,488	-23.0	-34.8	26	20.4	29	7,272	-29.9	-41.6	28	17.7														
350	30	8,178	-38.0	-46.4	26	15.8	29	8,538	-25.7	-38.2	27	20.7	30	8,310	-34.7	-48.6	27	23.9	28	8,456	-30.0	-44.4	26	24.2	29	8,213	-36.8	-47.6	28	19.5														
300	30	9,219	-45.8		27	16.5	29	9,633	-34.2	-46.1	27	24.4	30	9,367	-42.1	-47.6	27	27.0	28	9,533	-38.1	-48.7		26	29.6	29	9,258	-45.3	27	20.2														
250	30	10,415	-52.9		27	19.2	29	10,862	-44.2	-47.2	27	28.9	29	10,578	-50.0		27	30.8	28	10,764	-47.3		26	34.9	29	10,454	-52.7	27	22.1															
200	30	11,845	-58.1		29	21.5	29	12,312	-55.5	-55.5	27	32.7	30	11,577	-55.5		27	34.6	28	11,764	-52.7		26	37.8	29	11,608	-58.1	27	23.7															
175	30	12,678	-57.3		27	15.7	28	13,184	-61.2		27	31.0	29	12,862	-57.6		27	35.1	27	13,094	-60.9		27	36.7	29	12,735	-55.2	27	23.3															
150	30	13,656	-55.9		27	14.5	28	14,129	-66.0		27	26.8	29	13,833	-59.0		27	30.7	27	13,993	-65.5		27	34.8	29	13,718	-55.8	28	21.3															
125	30	14,813	-57.3		26	12.8	27	15,225	-68.8		26	22.5	29	14,969	-61.9		27	24.1	27	15,101	-67.3		27	26.5	29	14,874	-57.7	28	17.8															
100	29	16,219	-59.3		26	9.0	27	16,546	-73.1		27	18.8	29	16,342	-64.2		28	19.1	26	16,431	-71.1		27	21.0	29	16,276	-59.7	28	13.2															
80	29	17,619	-58.6		25	6.2	27	17,845	-75.7		27	18.7	29	17,702	-65.4		28	11.8	26	17,745	-72.6		27	14.3	29	17,667	-60.9	28	8.8															
60	29	18,455	-58.7		25	4.5	27	18,622	-73.7		27	15.7	29	18,511	-64.2		28	7.6	26	18,529	-70.7		27	11.8	29	18,490	-58.9	28	6.8															
40	28	19,422	-58.6		24	1.8	26	19,537	-77.9		27	.7	28	19,464	-62.9		27	3.2	22	19,445	-68.8		26	.5	29	19,462	-59.3	29	4.1															
20	27	20,513	-58.2		15	.7	26	20,646	-63.7		09	3.4	28	20,590	-60.5		29	1.7	22	20,554	-63.8		19	1.0	29	20,608	-57.8	29	2.5															
0	26	21,984	-57.5		11	1.8	26	22,028	-60.5		08	5.7	27	21,990	-58.4		15	.9	22	21,933	-61.0		09	3.3	29	22,017	-57.3	29	.5															
0	24	23,813	-56.3		08	2.5	25	23,839	-55.7		08	11.5	27	23,812	-55.7		07	2.8	22	23,738	-56.4		08	4.1	29	23,844	-55.2	08	1.1															
0	24	24,975	-55.2		08	2.4	25	25,010	-52.0		08	10.6	27	24,980	-53.4		08	3.1	21	24,909	-53.0		09	4.8	29	25,012	-53.7	03	.8															
0	26	26,405	-53.7		04	1.2	26	26,471	-49.6		08	9.9	27	26,428	-49.6		18	.3	21	26,359	-49.7		07	8.9	29	26,408	-53.7	03	.8															
15	19	26,272	-51.3		04	7.0	22	26,390	-43.7		09	9.9	26	26,336	-45.3		15	1.3	25	26,373	-48.0		07	1.1	29	26,330	-47.8	26	2.8															
10							27	11,183	-38.2					23,082	-38.6		25	2.5	6	11,001	-38.5					17,310	-41.1	28	7.5															



Average monthly values

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## Average monthly values

APRIL 1980

SPokane, WA 932 MB					TAMPA BAY, FL 1014 MB					TOPEKA, KS 982 MB					TRUK, CAROLINE IS. 1010 MB					TUCSON, AZ 923 MB											
SFC	30	720	-6.2	2.4	15	-6	30	13	16.3	14.6	13	-8	30	268	W.6	2.3	35	-6	30	2	28.5	24.8	06	3.4	40	789	12.3	-3.6	14	2.2	
1000							30	132	18.5	15	14	-1.0						1.6	30	93	2	28.5	24.8	07	4.4						
950							30	573	17.7	9.5	21	-2.1	30	545	9.8	-1	32	2.0	30	548	24.2	22.0	08	7.1							
900		1.002	7.4	-3.3	17	2.2	30	1,034	15.4	5.2	24	-3.5	30	993	7.9	-2.5	31	2.8	30	1,021	21.4	17.8	08	7.3	30	1,005	15.6	-2.7	15	1.9	
850		1.472	5.5	-2.9	19	2.5	30	1,516	12.6	2.0	25	-5.0	30	1,462	5.4	-5.4	31	4.1	30	1,516	18.7	13.4	08	8.6	30	1,488	13.1	-6.5	18	1.1	
800		1.964	2.7	-5.0	20	3.1	30	2,023	10.2	-2.9	26	-6.3	30	1,955	2.8	-7.4	31	5.7	30	2,035	16.7	9.3	08	5.7	30	1,994	9.4	-7.1	21	1.4	
750		2.486	-2.4	-9.0	21	4.0	30	2,558	8.1	-6.9	26	-7.8	30	2,475	2	-12.4	31	6.4	30	2,584	14.0	5.3	07	5.8	30	2,525	5.8	-10.2	24	1.0	
700		3.034	-4.0	-12.3	21	4.7	30	3,125	5.1	-10.4	27	-9.5	30	3,025	-2.7	-16.2	31	6.7	30	3,164	11.1	1.1	07	4.0	30	3,086	2.2	-14.5	24	4.5	
650		3,610	-5.2	-15.4	22	5.3	30	3,717	2.1	-13.7	28	-10.7	30	3,611	-19.7	-16.1	31	7.0	30	3,760	7.0	-2.5	07	3.0	30	3,682	-1.1	-18.7	25	4.5	
600		4,233	-11.9	-21.8	22	6.0	30	4,367	-2.5	-16.6	26	-13.5	30	4,230	-10.0	-23.2	30	9.1	30	4,436	4.1	-6.8	07	3.2	30	4,312	-5.7	-22.7	26	7.9	
550		4,893	-16.3	-26.2	22	6.8	30	5,051	-7.2	-21.1	27	-15.3	30	4,895	-14.9	-27.8	29	9.1	30	5,139	5	-11.4	09	3.8	30	4,989	-9.9	-26.0	27	10.6	
500		5,604	-21.2	-31.1	22	8.6	30	5,787	-12.2	-25.7	27	-17.0	30	5,609	-20.1	-32.8	29	10.5	30	5,898	-3.7	-16.0	10	3.5	30	5,717	-15.0	-29.7	17	13.0	
450		6,370	-26.7	-34.5	23	7.3	30	6,585	-17.4	-31.8	27	-18.6	30	6,382	-25.6	-37.5	28	11.5	30	6,724	-8.3	-22.1	08	2.8	30	6,506	-20.5	-33.5	27	15.3	
400		7,210	-33.2	-38.7	23	7.7	30	7,457	-23.5	-37.2	27	-20.8	30	7,225	-32.2	-42.5	28	12.6	30	7,628	-14.0	-27.1	06	1.0	30	7,367	-26.6	-40.3	27	17.2	
350		8,136	-39.9	-44.9	24	8.4	30	8,423	-30.3	-44.1	27	-23.4	29	8,155	-39.8	-47.1	28	14.1	30	8,633	-20.4	-33.9	31	1.2	29	8,317	-33.6	-45.4	27	19.5	
300		9,170	-46.9		25	10.0	30	9,498	-38.7	-50.0	27	-26.4	29	9,192	-46.3		27	15.9	30	9,752	-29.0	-42.1	26	2.9	29	9,513	-50.8		27	21.0	
250		10,360	-54.6		25	11.6	30	10,717	-45.7	-57.8	27	-29.8	29	10,365	-54.7		27	17.2	30	10,972	-39.0	-51.4	22	5.2	29	10,692	-50.2		27	25.4	
200		11,768	-56.5		26	12.2	30	12,174	-55.9		27	-34.8	29	11,813	-55.1		28	18.7	28	12,516	-51.9		22	5.0	28	12,025	-56.1		27	30.2	
175		12,635	-56.2		26	10.2	30	13,017	-59.1		27	-34.6	29	12,667	-54.7		27	18.9	27	13,369	-58.8		22	4.7	28	12,872	-57.0		27	29.4	
150		13,620	-54.7		27	9.3	30	13,977	-61.7		27	-32.2	29	13,652	-55.4		28	18.4	27	14,319	-66.5		25	3.4	28	13,846	-58.7		27	26.8	
125		14,781	-55.7		27	9.0	30	15,099	-64.6		27	-26.1	29	14,810	-57.1		28	15.4	27	15,401	-74.8		31	4.3	28	14,984	-61.5		27	23.8	
100		16,260	-56.6		27	7.6	30	16,451	-67.7		27	-19.9	29	16,217	-58.7		29	11.8	27	16,676	-81.0		03	1.8	28	16,358	-63.8		27	18.1	
80		17,612	-56.6		27	4.6	30	17,789	-68.4		27	-15.0	29	17,616	-59.3		29	7.6	27	17,925	-81.2		08	4.0	28	17,721	-65.1		27	12.7	
70		18,458	-56.6		27	2.5	30	18,635	-68.0		27	-10.7	29	18,477	-68.0		29	3.6	27	18,786	-75.5		03	1.8	28	18,536	-64.6		27	8.5	
60		19,435	-56.4		24	1.7	30	19,521	-65.2		28	-4.8	29	19,422	-58.6		29	1.6	27	19,587	-71.2		09	13.8	27	19,481	-63.3		28	4.4	
50		20,552	-56.6		25	5	30	20,641	-62.2		34	-1.7	29	20,569	-57.9		33	1.9	27	20,682	-64.8		09	19.7	26	20,605	-61.4		27	1.3	
40		22,009	-56.0		07	1.5	30	22,029	-59.5		06	-3.3	29	21,982	-56.6		07	-4	27	22,067	-58.1		09	10.8	24	21,998	-59.0		06	-9	
30		23,844	-55.1		06	2.6	30	23,844	-56.0		08	-6.7	28	23,810	-55.4		12	-3	27	23,908	-52.2		26	1.6	22	23,14	-55.7		08	2.6	
25		25,054	-53.7		04	2.9	30	25,010	-53.3		08	-6.5	27	24,975	-54.0		06	-7	25	25,096	-48.9		27	4.2	22	24,980	-54.1		07	2.4	
20		26,444	-54.3		05	1.6	27	26,466	-48.5		09	-6.9	26	26,416	-51.4		02	-5	26	26,570	-45.9		26	6.2	22	26,421	-50.8		07	2.0	
15		28,285	-51.3		21	2.3	30	28,313	-54.4		10	-2.3	29	28,274	-54.4		2	2.3	28	28,495	-49.2		25	5.2	10	28,425	-52.2		13	3.0	
10		30,927	-47.8		35	2.3	17	31,133	-36.1		09	-8.0	19	31,006	-42.1		27	8.4	6	31,236	-39.4			14	31,057	-40.1		27	5.8		
7		35,315	-41.5		5	3	33,582	-33.5					11	33,566	-35.7																

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# RAWINSONDE DATA

Average monthly values

APRIL 1980

WAYCROSS, GA 1009 MB										WEST PALM BEACH, FL 1015 MB										WINNEBUCCA, NV 869 MB										WINSLOW, AZ 850 MB										YARUTAT, AK 1004 MB									
Standard pressure surface mb	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind																				
					Direction tens of deg.	Speed m.p.h.					Direction tens of deg.	Speed m.p.h.					Direction tens of deg.	Speed m.p.h.					Direction tens of deg.	Speed m.p.h.																									
5FC	30	44	13.6	11.1	23	7	29	7	18.7	16.8	10	4	30	1,312	3.2	-5.9	19	3	27	1,487	4.7	-3.6	21	2.1	30	12	3.7	1.5	14	3.7																			
1000	29	126	15.2	11.5	25	8	29	137	21.0	16.8	17	1.6																																					
950	30	560	15.5	6.3	25	3.6	29	580	18.4	13.4	21	1.4																																					
900	30	1,017	12.9	2.9	25	5.0	29	1,042	15.6	9.3	24	2.3																																					
850	30	1,495	10.0	-4.4	26	6.2	29	1,525	13.2	4.2	26	4.2	30	1,487	7.5	-3.5	26	1	12	1,527	6.5	-6.2	16	1.3	30	1,549	-3.7	-6.8	15	9.6																			
800	30	1,997	7.9	-5.1	25	7.5	29	2,033	10.8	-3	26	5.8	30	1,985	5.4	-5.7	26	1.0	27	1,988	8.4	-6.5	25	2.8	30	1,925	-6.8	-10.0	15	9.6																			
750	30	2,527	5.1	-8.4	26	8.1	29	2,570	8.6	-5.7	26	7.5	30	2,509	1.8	-8.6	25	2.2	27	2,518	4.8	-9.1	25	4.0	30	2,526	-10.3	-14.4	16	9.6																			
700	30	3,087	2.2	-13.8	26	9.6	29	3,137	5.7	-10.5	27	8.7	30	3,062	-1.8	-12.1	25	3.7	27	3,076	7	-12.1	24	4.6	30	2,854	-13.9	-18.0	16	9.7																			
650	30	3,681	-1.6	-17.9	26	11.8	29	3,740	2.6	-14.4	27	10.2	30	3,648	-5.8	-15.9	24	4.4	27	3,667	-3.4	-15.7	24	5.4	30	3,414	-17.4	-22.0	17	10.0																			
600	30	4,314	-5.4	-21.5	26	14.6	29	4,382	-1.6	-17.7	27	11.8	30	4,270	-9.8	-20.7	25	5.4	27	4,295	-7.8	-19.9	25	6.7	30	4,009	-21.6	-25.6	17	10.1																			
550	30	4,991	-9.7	-24.0	26	16.6	29	5,069	-6.4	-21.3	27	13.3	30	4,936	-13.9	-24.8	27	6.4	27	4,966	-12.3	-25.3	26	8.9	30	4,644	-25.8	-29.7	18	10.6																			
500	30	5,720	-14.6	-27.4	27	18.6	29	5,807	-11.4	-26.2	27	15.3	30	5,654	-18.7	-29.3	27	8.1	27	5,687	-17.5	-31.3	26	10.9	30	5,328	-30.7	-36.1	18	10.9																			
450	29	6,511	-19.9	-33.0	27	21.1	29	6,607	-16.5	-31.3	27	17.5	30	6,431	-24.2	-35.4	27	8.5	27	6,467	-23.1	-35.5	27	12.1	30	6,068	-36.2	-39.7	19	11.7																			
400	29	7,374	-24.1	-38.8	27	24.2	29	7,483	-27.5	-36.3	27	20.3	30	7,279	-30.4	-39.4	27	9.9	27	7,319	-29.3	-40.0	27	14.3	29	6,680	-41.9	-42.6	19	13.6																			
350	29	8,330	-33.2	-44.0	27	25.8	29	8,453	-29.5	-41.8	27	23.8	30	8,217	-37.8	-43.8	26	6.4	27	8,262	-36.1	-45.0	27	16.4	27	7,778	-47.8		20	15.1																			
300	29	9,392	-41.4	-48.6	27	27.9	29	9,532	-37.5	-50.3	27	27.2	30	9,258	-46.0		27	7.7	27	9,313	-43.8		27	18.4	27	8,781	-52.6		20	16.6																			
250	29	10,605	-50.3		27	31.8	29	10,766	-46.4		27	31.3	30	10,448	-54.1		27	8.9	27	10,516	-51.9		27	21.7	27	9,959	-52.1		20	16.0																			
200	29	12,039	-56.4		27	35.6	29	12,218	-55.5		27	35.8	29	11,865	-57.4		27	10.8	27	11,942	-57.1		27	24.5	27	11,415	-49.1		20	12.4																			
175	29	12,885	-57.5		27	36.0	29	13,062	-58.8		27	34.8	29	12,710	-57.0		27	10.0	27	12,788	-56.7		27	22.8	27	12,293	-48.3		20	11.5																			
150	29	13,855	-59.1		27	31.3	29	14,022	-62.0		27	31.4	29	13,688	-56.5		27	9.6	27	13,764	-57.5		27	21.9	27	13,309	-48.4		20	10.7																			
125	29	14,989	-62.8		27	26.8	29	15,142	-65.2		27	27.1	29	14,843	-57.7		27	7.9	27	14,911	-59.4		27	17.6	27	14,511	-48.1		20	9.8																			
100	29	16,352	-65.9		27	20.8	29	16,490	-68.4		27	21.1	29	16,244	-59.4		26	6.7	26	16,301	-61.8		27	13.3	27	15,981	-48.4		20	7.9																			
80	29	17,708	-65.3		27	14.0	29	17,823	-69.3		27	15.2	29	17,640	-59.7		27	3.0	26	17,676	-63.1		27	9.9	27	17,445	-49.5		19	6.6																			
70	29	18,523	-64.2		26	5.8	29	18,622	-68.0		27	9.1	29	18,475	-59.9		25	2.2	26	18,497	-63.2		28	6.4	27	18,320	-49.8		19	6.3																			
60	29	19,469	-62.8		27	5.8	29	19,555	-65.2		28	4.1	28	19,441	-59.4		13	.6	25	19,445	-62.7		28	2.9	27	19,327	-50.4		19	4.9																			
50	29	20,599	-60.9		30	2.1	29	20,675	-61.9		34	1.6	25	20,589	-58.9		07	1.1	21	20,572	-61.0		24	1.0	24	20,513	-51.0		18	3.7																			
40	29	21,992	-59.0		07	3.1	29	22,064	-59.3		06	3.1	22	21,993	-57.1		08	2.2	21	21,966	-58.9		29	.9	23	21,968	-51.8		16	2.4																			
30	29	23,813	-55.2		08	4.8	29	23,885	-54.8		08	5.9	19	23,826	-55.1		08	1.9	20	23,788	-56.5		08	3.4	19	23,827	-52.2		12	2.0																			
25	29	24,983	-52.8		08	4.8	27	25,056	-51.9		08	6.3	18	24,994	-54.2		07	1.1	19	24,956	-54.5		07	1.9	19	25,006	-52.5		09	2.5																			
20	29	26,436	-49.2		07	4.4	27	26,514	-47.4		09	7.6	17	26,429	-52.0		05	1.0	16	26,395	-51.4		10	.4	14	26,445	-52.2		08	2.8																			
15	29	28,384	-44.8		09	3.8	25	28,426	-43.9		09	5.7	9	28,284	-49.1				12	28,287	-47.5		29	1.9	13	28,302	-51.7		09	2.9																			
10	19	31,063	-38.8		23	1.9	17	31,172	-37.0		11	4.3							8	30,990	-42.5				5	30,933	-49.4																						
7							5	33,596	-32.7																																								

YAP, CAROLINE IS.  
1009 MB

Standard pressure surface mb	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Speed m.p.h.
5FC	30	14	28.4	24.6	07	4.3
1000	30	94	26.7	23.9	07	5.2
950	30	547	23.2	21.4	08	6.8
900	30	1,018	20.4	17.3	08	8.8
850	30	1,511	17.8	13.5	08	7.8
800	30	2,029	15.8	8.4	08	8.7
750	30	2,576	13.5	3.1	08	6.6
700	30	3,155	10.9	-2.3	08	8.8
650	30	3,770	7.8	-7.1	08	5.9
600	30	4,425	4.0	-12.1	09	8.1
550	30	5,128	.2	-16.6	09	7.0
500	30	5,886	-4.1	-21.2	09	7.7
450	30	6,709	-9.1	-26.1	08	6.6
400	30	7,610	-14.8	-31.7	07	5.6
350	30	8,611	-21.4	-37.1	07	4.4
300	30	9,726	-29.8	-44.1	05	1.1
250	30	10,999	-40.0	-52.4	25	2.1
200	30	12,482	-52.4		24	4.8
175	29	13,333	-59.3		23	5.0
150	29	14,281	-67.0		25	6.6
125	29	15,362	-74.6		30	2.9
100	29	16,633	-82.1		01	2.6
80	28	17,879	-81.1		09	8.0
70	28	18,636	-77.8		09	7.8
60	28	19,530	-72.1		09	17.9
50	28	20,622	-65.6		09	19.1
40	28	21,996	-60.6		09	15.1
30	28	23,817	-54.8		08	4.3
25	28	24,997	-50.8		18	.2
20	28	26,463	-46.5		24	3.4
15	25	28,390	-43.0		25	3.8
10	15	31,135	-39.6			

# SOLAR RADIATION INTENSITIES

Tabulated in langley's per minute on a surface normal to the direction of the sun.

APRIL 1980

Date	Sun's zenith distance									
	A M.				*	P M				
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°	
HAUNA LOA OBSERVATORY, HI										
	Air mass									
	1.34	2.67	2.01	1.34	*	1.34	2.01	2.67	3.34	
1-----	1.16	1.23	1.34	1.45	----	----	----	----	----	----
2-----	1.11	1.19	1.30	1.42	----	----	----	----	----	----
3-----	1.21	1.29	1.39	1.50	1.61	1.48	1.35	1.25	1.16	----
4-----	1.14	1.21	1.45	1.55	----	----	----	----	----	----
5-----	1.17	1.24	1.34	1.46	1.55	----	----	----	----	----
6-----	1.16	1.23	1.34	1.45	----	----	----	----	----	----
7-----	1.21	1.30	1.38	1.49	----	----	----	----	----	----
8-----	1.18	1.25	1.34	1.45	----	----	----	----	----	----
9-----	1.12	1.18	1.29	1.41	----	----	----	----	----	----
10-----	1.20	1.26	1.37	1.48	----	----	----	----	----	----
11-----	1.18	1.25	1.35	1.46	----	----	----	----	----	----
12-----	-----	-----	-----	-----	1.56	1.41	1.28	1.17	1.10	----
13-----	-----	-----	-----	-----	1.56	1.40	1.30	1.21	1.13	----
14-----	1.09	1.18	1.29	1.40	1.56	----	----	----	----	----
15-----	1.11	1.20	1.31	1.42	1.54	----	----	----	----	----
16-----	-----	-----	-----	-----	----	1.43	1.32	1.23	1.16	----
Aver- ages	1.15	1.23	1.34	1.45	1.56	1.43	1.31	1.22	1.14	----

Date	Sun's zenith distance									
	A M				*	P M				
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°	
TUCSON, AZ										
	Air mass									
	4.64	3.71	2.78	1.86	*	1.86	2.78	3.71	4.64	
1-----	.85	.95	1.02	1.17	1.39	.97	.70	.50	----	----
2-----	.75	.85	.99	1.17	1.41	1.20	.99	-----	-----	-----
3-----	.78	.90	1.05	1.19	1.42	1.18	1.02	.87	.76	-----
4-----	-----	-----	-----	-----	1.42	1.19	1.00	.85	.74	-----
5-----	-----	-----	-----	1.23	1.40	1.21	1.08	.95	.86	-----
6-----	-----	.97	1.05	1.22	1.40	1.26	1.12	.98	.87	-----
7-----	.72	.84	.98	1.17	1.37	1.20	1.06	.91	.81	-----
8-----	.82	.93	1.05	1.22	1.42	1.20	1.05	.93	.83	-----
9-----	.82	.94	1.07	1.22	1.42	1.18	1.01	.88	.81	-----
10-----	.82	.94	1.07	1.23	1.43	1.21	1.06	.92	.80	-----
11-----	.80	.90	1.04	1.20	1.39	.96	.70	.57	.43	-----
12-----	.85	.97	1.09	1.23	1.41	1.22	1.04	.91	.78	-----
13-----	.83	.94	1.08	1.26	1.46	1.29	1.14	1.02	.92	-----
14-----	.94	1.04	1.17	1.30	1.46	1.27	1.12	1.00	.89	-----
15-----	.88	.97	1.08	1.26	1.41	1.08	.82	.62	.49	-----
16-----	.54	.68	.83	1.05	1.33	1.03	.80	.64	.50	-----
17-----	.58	.71	.87	1.06	1.31	.98	.73	.58	.47	-----
18-----	.52	.66	.80	1.02	1.30	1.05	.82	.66	.53	-----
19-----	.60	.72	.86	1.06	1.31	-----	.72	-----	-----	-----
20-----	.60	.83	.95	1.14	-----	1.21	1.08	.97	.87	-----
21-----	-----	-----	-----	-----	-----	1.10	.96	.84	.73	-----
22-----	.81	.91	1.03	1.17	-----	-----	-----	-----	-----	-----
23-----	-----	-----	1.02	1.21	-----	1.18	1.01	-----	-----	-----
24-----	.78	.88	1.01	1.15	1.30	1.11	.91	.77	.65	-----
25-----	.70	.81	.93	1.11	1.38	1.13	-----	-----	-----	-----
26-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
27-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	.78
28-----	.75	.87	1.03	1.19	1.37	1.16	-----	-----	-----	-----
29-----	-----	-----	-----	1.19	-----	1.24	-----	-----	-----	-----
30-----	.84	.94	1.07	-----	-----	-----	-----	-----	-----	-----
Aver ages	.75	.88	1.01	1.18	1.39	1.15	.95	.82	.73	-----

## NET RADIATION

Net radiation in langley's per day (8 a.m. to 8 a.m.) at Palmer, Alaska.

Date . . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langley's . .	-3	-17	34	58	82	77	65	39	106	102	91	56	79	20	44	119	20	88	88	59	133	110	47	21	78	76	95	116	114	138	71	



# REFERENCE NOTES

## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES:

Dates in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

+ And also on an earlier date or dates.

D Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snowfall.

## CLIMATOLOGICAL DATA - METRIC UNITS: Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

B Number of days maximum 21.1°C. or above for Alaskan Stations.

Y Peak Gust.

+ And also on an earlier date or dates.

U Indicates Urban site.

R Indicates Rural site.

g Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

1 foot = 0.3048 meters

°F. =  $\frac{9}{5} \times ^\circ\text{C} + 32$

1 inch = 25.4 millimeters

1 mile per hour = 0.447 meters per second

## HEATING DEGREE DAYS: Data from airport unless otherwise specified.

U Indicates Urban site.

R Indicates Rural site.

## COOLING DEGREE DAYS: Data from airport unless otherwise specified.

U Indicates Urban site.

R Indicates Rural site.

## STORM SUMMARY:

o Includes crop damage.

C Crop damage.

\* No occurrence of storms or unusual weather phenomena reported.

@ Includes heavy sleet storm.

# Freezing drizzle and freezing rain, commonly known as glaze.

g For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.

+ No Storm Data Report received for this State.

<> Report Incomplete.

† Storm damages are placed in categories varying from 1 to 9 as follows:

1 Less than \$50

2 \$50 to \$500

3 \$500 to \$5,000

4 \$5,000 to \$50,000

5 \$50,000 to \$500,000

6 \$500,000 to \$5 Million

7 \$5 Million to \$50 Million

8 \$50 Million to \$500 Million

9 \$500 Million to \$5 Billion

## RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, G.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Dew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Dew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Dew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygrometers. These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

\* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.

+ Observations for these stations are scheduled at 0000 G.C.T.

† Dew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Dew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Dew Point temperatures replaced Relative Humidity January 1967.

SOLAR RADIATION INTENSITIES: Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

( )	Clouds Present	DM	Moderate Dust	HM	Moderate Haze	KS	Slight Smoke
*	Values corresponding to true solar noon	DS	Slight Dust	HS	Slight Haze	M	Moderate Haze-indeterminable
BD	Blowing Dust	F	Fog	I	Intense Haze-indeterminable	N	Sand
BN	Blowing Sand	GF	Ground Fog	K	Smoke	S	Slight Haze-indeterminable
D	Dust	H	Haze	KI	Intense Smoke		
DI	Intense Dust	HI	Intense Haze	KM	Moderate Smoke		

NET RADIATION: The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of sod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.

Chart 1. A. Normal Daily Average Temperature (°F. 1941-70), April.



B. Temperature Departure from 30 - Year Mean (°F 1941-70), April 1980

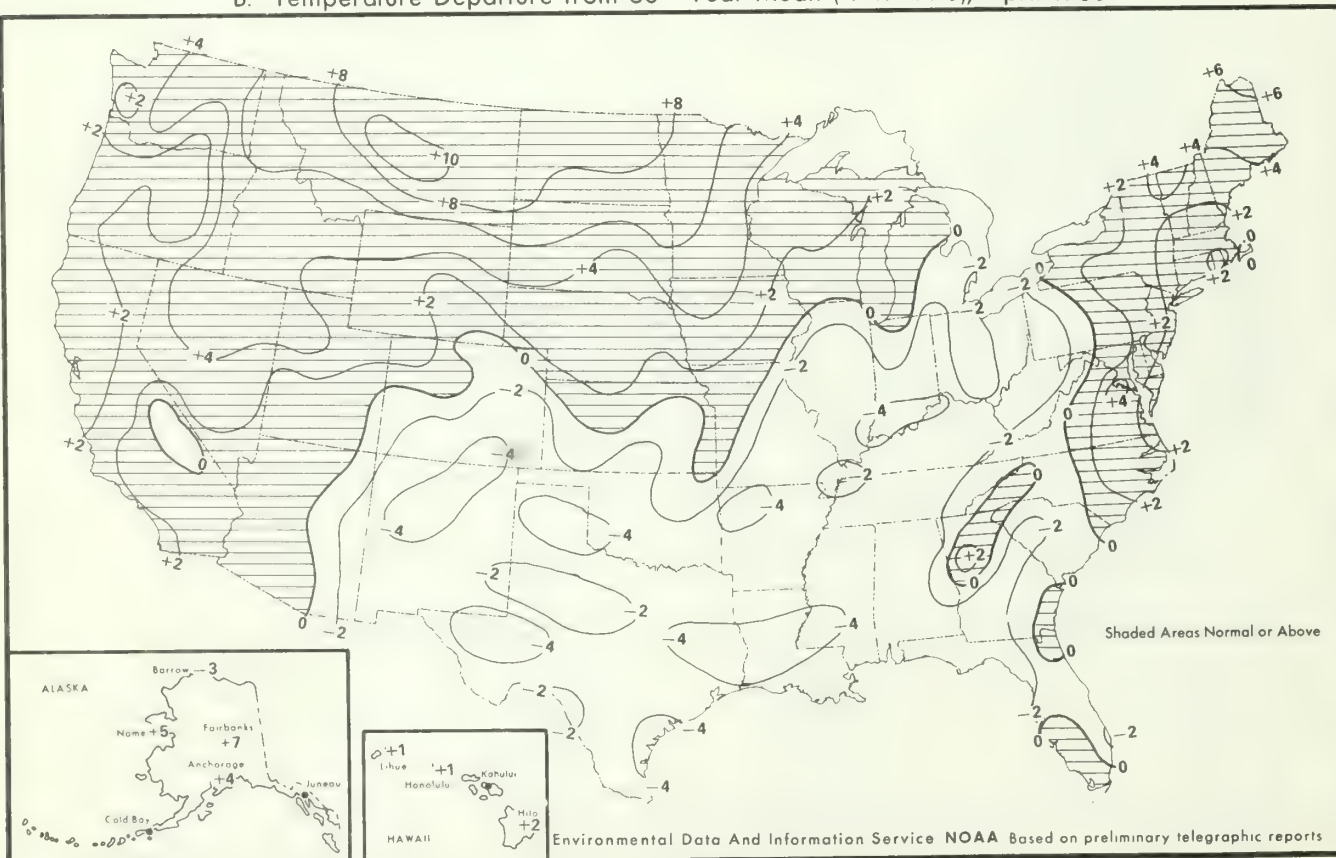
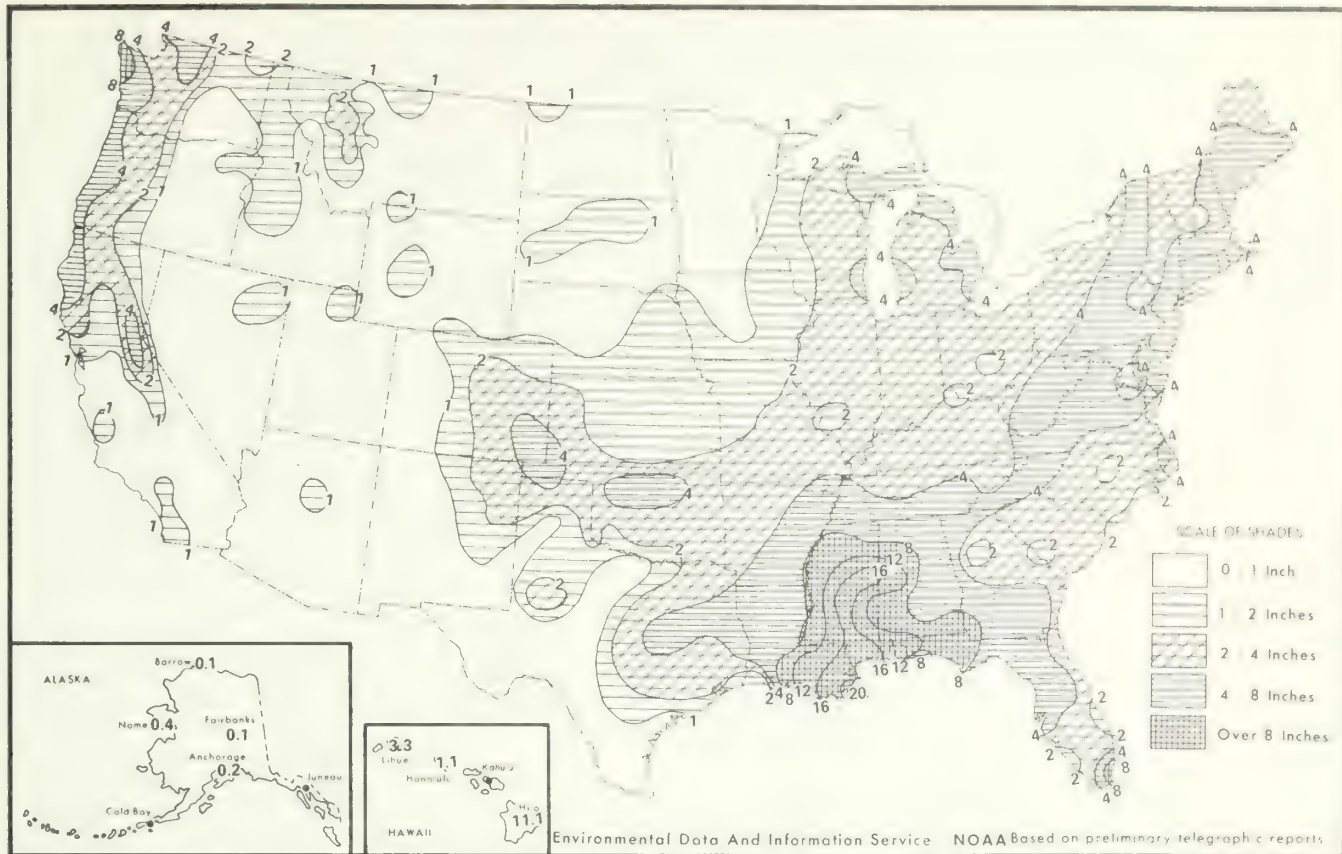




Chart II A Total Precipitation (Inches), April 1980



B. Percentage of Normal Precipitation, April 1980

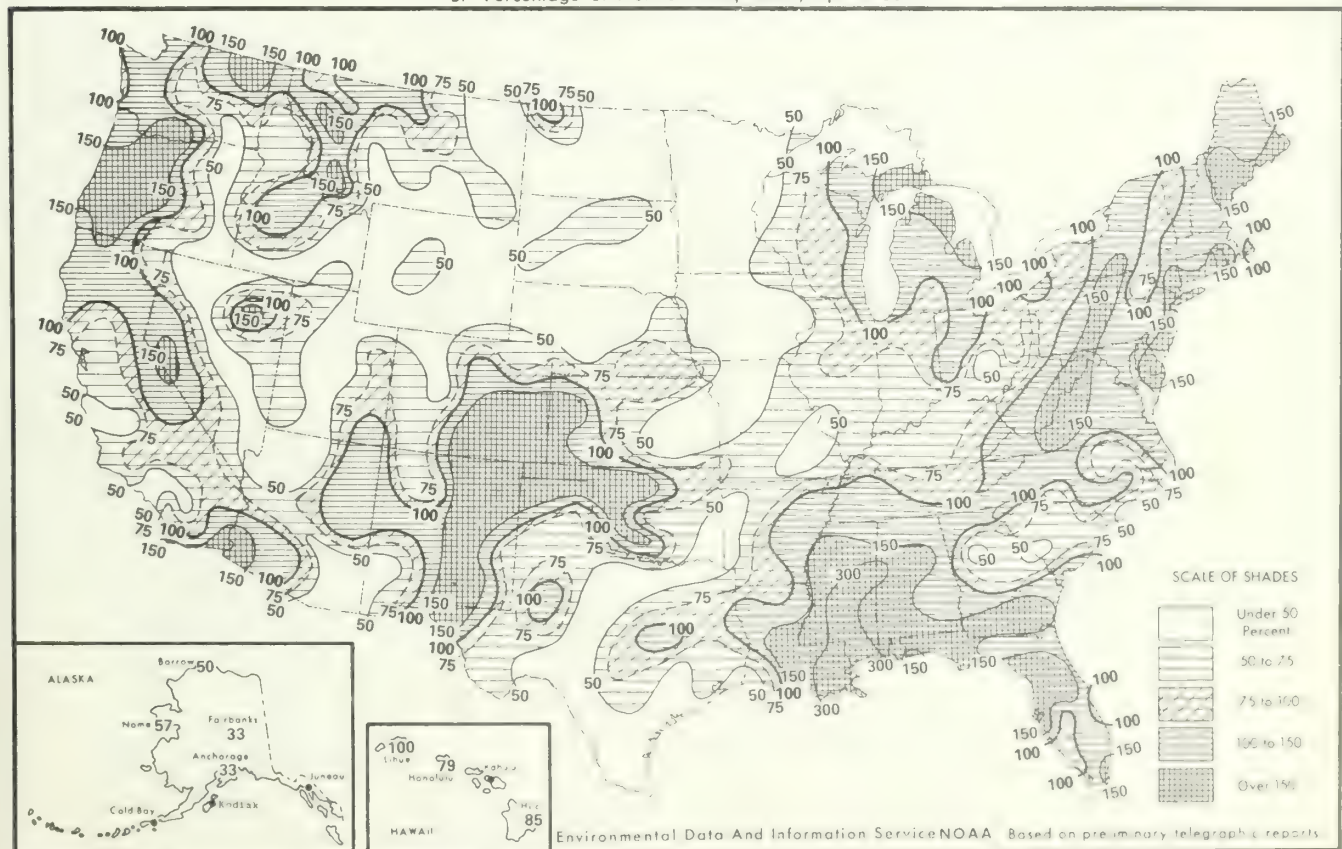
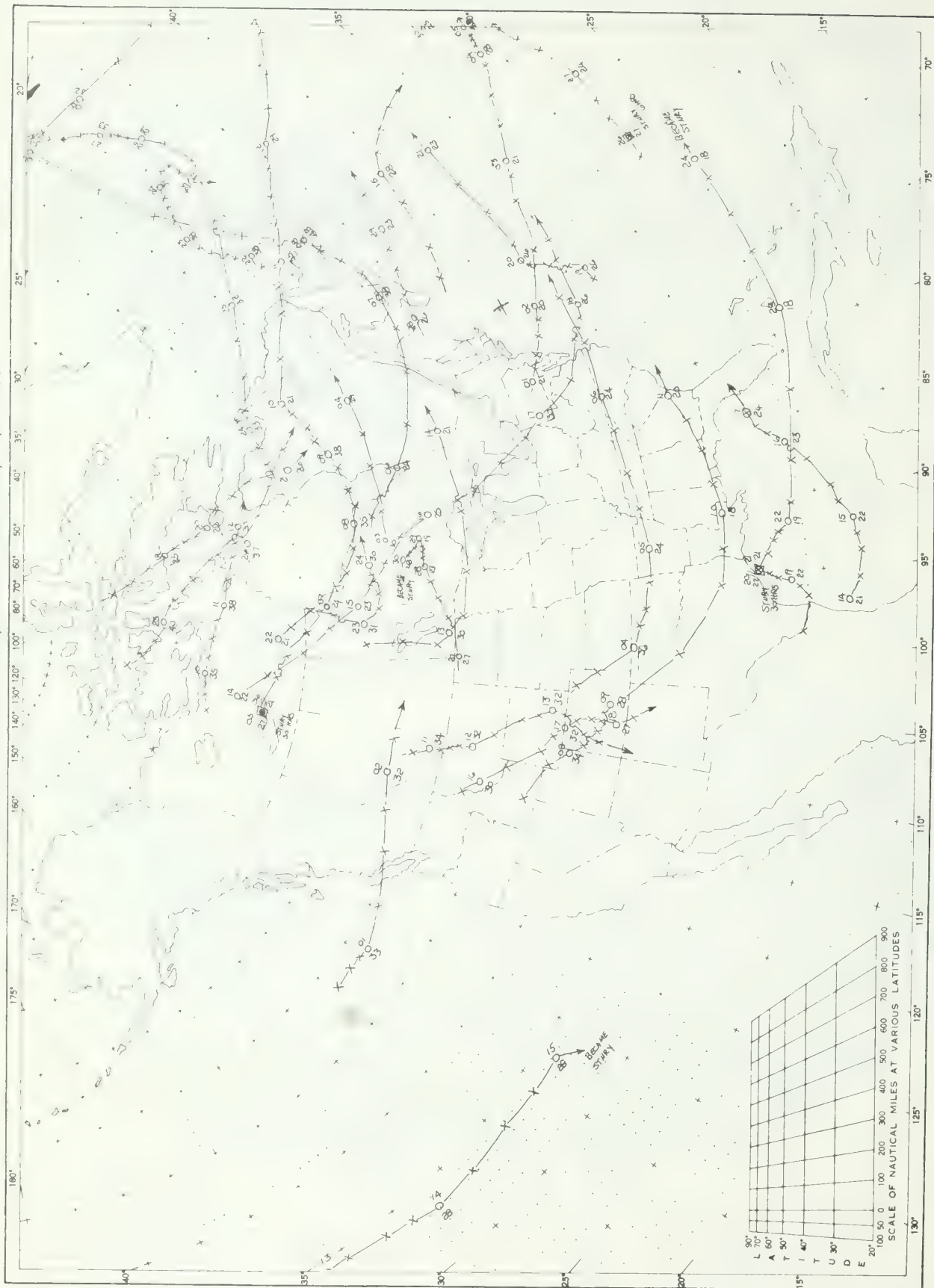


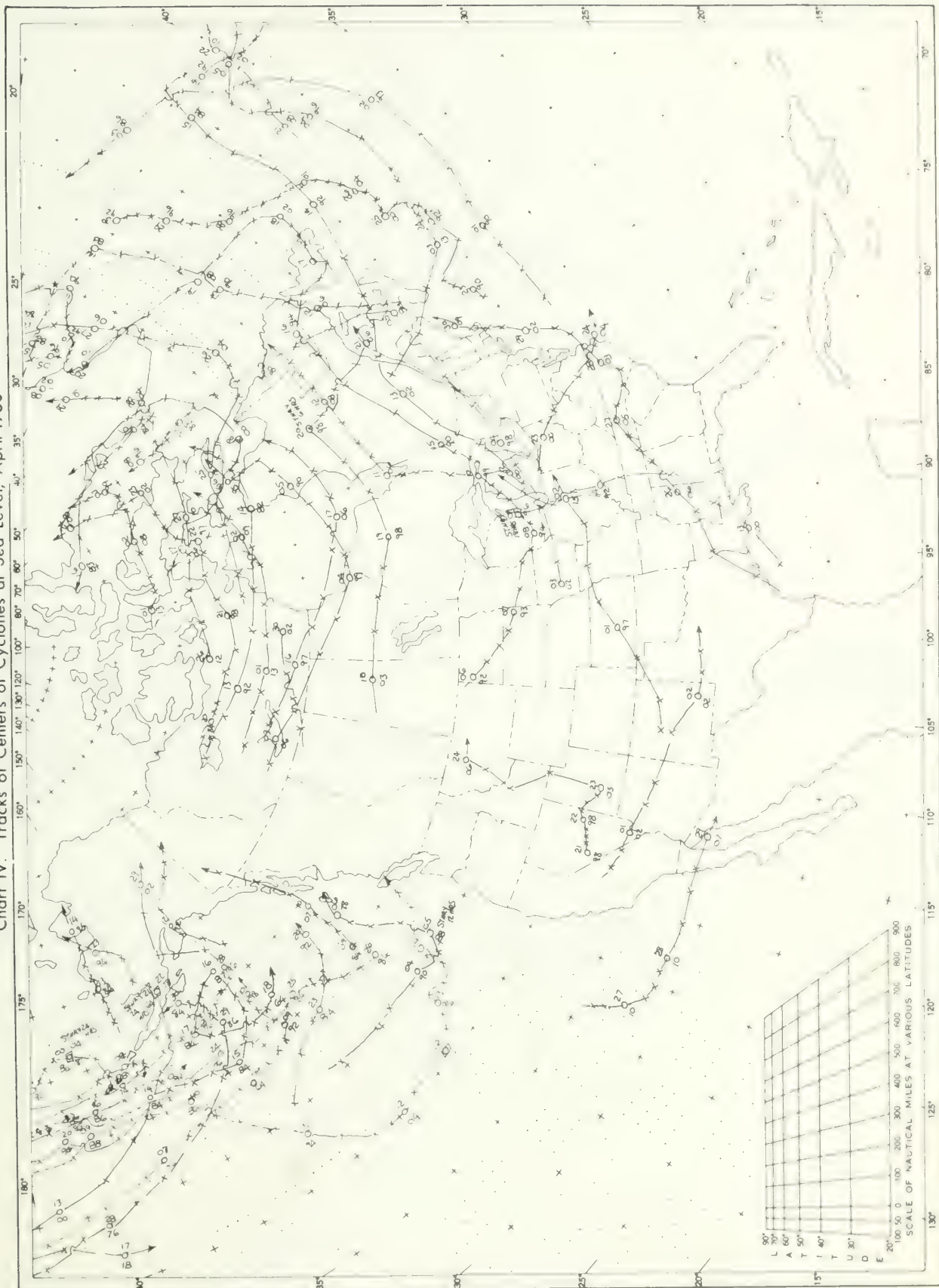
Chart III. Tracks of Centers of Anticyclones at Sea Level, April 1980



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
 X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.



Chart IV. Tracks of Centers of Cyclones at Sea Level, April 1980



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar  
 X's indicate intervening 6 hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included

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MAY 1980

VOLUME 31

NUMBER 5

# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



"I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AND IS COMPILED FROM INFORMATION RECEIVED AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA 28801."

*David E. Mitchell*

DIRECTOR  
NATIONAL CLIMATIC CENTER

**noaa**

NATIONAL OCEANIC AND  
ATMOSPHERIC ADMINISTRATION

ENVIRONMENTAL DATA AND  
INFORMATION SERVICE

NATIONAL CLIMATIC CENTER  
ASHEVILLE, N.C.

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NOTE: Late reports and corrections will be carried in the June and December issues of this publication. An explanatory page "Description of Charts" will be carried in the January and July issues.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

MAY 1980

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist  
Environmental Data and Information Service, NOAA

**HIGHLIGHTS:** Record high temperatures over the northern Plains during the first week of May sapped more moisture from the already drought-stricken area. Then a record cold spell hit and taxed the vigor of plants that had managed to germinate. Topsoils were very dry in the western Corn Belt as grain was planted in record time. It was not until midmonth that enough moisture fell to insure proper germination and not until the end of the month that some light rain fell in parts of the northern Plains. Late season snow fell heavily in the Rockies as most of the west remained cooler than normal for most of May.

A ridge of high pressure in the western United States and Canada forced weather systems to move southward through the central Rockies during the first 9 days of May, producing unusually high temperatures in much of the northern Plains. A deep low pressure system moved into the Atlantic off New England accompanied by showers along the New England and mid-Atlantic Coasts. Moist flow from the Gulf of Mexico caused showers and thunderstorms through most of Texas and into the central Rockies. As the ridge of high pressure in the west sharpened, a burst of cold air from north central Canada moved into the northern Plains. The coldest area coincided with the area of drought in the northern Plains where newly seeded grains were struggling to germinate. As the cold air moved southward and eastward, showers began along its leading edge and brought light to moderate rain to the south and east.

On May the 9th the high pressure ridge began to relocate farther west, and a low pressure system formed in southern Montana. Winds from the south brought some moisture northward and very light rain fell in parts of the northern Plains. Moderate amounts were measured through the northern Rockies and Plateau and along the Pacific Coast. During the next 10 days

a succession of weather systems moved from the Pacific northwest to the central Rockies and Plains and then northeastward. Most of the northern Plains stayed dry during this period but the western portion of the Corn Belt got some much needed precipitation on the newly planted corn. Heavy rain accumulated from most of western Texas through the central Plains, the lower Mississippi Valley through the Ohio Valley, and in much of the mid-Atlantic States.

The progression of weather systems continued in a similar manner during the week of the 19th-25th except that systems moved further south from the central Rockies. The western portion of the northern Plains had some welcome rain but except for some light showers in eastern North Dakota, most of the northern Plains stayed dry. Severe weather developed nearly every day throughout the south and up the east coast to Maryland. A heat wave enveloped the northern Plains and worsened the severe drought in that area. As the hot weather moved eastward, it was followed by much cooler air which covered most of the west by the 25th.

During the last week of May some light showers accompanied the advancing cooler air as it moved into the northern Plains, but many areas still had no rain. Moisture from the Gulf of Mexico did move northward but stayed mostly east of the very dry area. Eastern North Dakota and much of South Dakota accumulated nearly an inch of moisture and some isolated points had as much as 2 inches. Most of the Corn Belt had moderate to heavy amounts of rain. Tornadoes and other severe weather shook the Nation from the Texas Panhandle through the Ohio Valley and the Great Lakes. Cool weather again dominated most of the west, while most of the east was warm and humid.

## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

MAY 1980

STATE	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest °F	Date	Station	Lowest °F	Date	Station	Greatest In.	Station	Least In.
Alabama	3 Stations	81	28+	Barter Island WSO AP	-13	1	Mobile WSO AP	15.08	Brundidge	3.71
Alaska							Port Chatham	16.18		.00
Arizona							Flagstaff WSO AP	1.74	20 Stations	.00
Arkansas	Waldron	108	11+	White Mountain 2	30	9	Bluff City 3 SW	11.29	Saint Francis	2.36
California	2 Stations	108	11+				Lake Spaulding	4.80	9 Stations	.00
Colorado	Holly	77	26	Rio Grande Reservoir	10	25+	Squaw Mountain	8.59	Eagle FAA AP	.85
Connecticut	Hartford WSO AP	89	1+	Wigwam Reservoir	30	10	Putnam Lake	3.82	Falls Village	1.15
Delaware							Wilmington Porter Reservoir	3.10	Lewes 1 SW	2.03
Florida	Myakka River State Park	89	18	Smith Creek	43	10	Crestview FAA AP	9.10	Fernandina Beach	1.34
Georgia	2 Stations	91	30+	Blairsville Exp Station	32	13		9.74	Montezuma	1.17
Idaho	4 Stations	91	30+	Mauna Loa Slope Obs	32	13	Kokui 380	104.00	Puonene 396	.29
Illinois	3 Stations	81	21	Warren	22	12	Grangeville 11 SE	6.04	Payette	1.16
Indiana							Grandview Dam 1 S	5.39	Watseka 2 NW	.86
Iowa	2 Stations	93	30+	2 Stations	26	9	Wabash 1 SE	6.62	Rockville	.63
Kansas	3 Stations	93	30+	3 Stations	26	9	Mason City FAA AP	8.09	Eddyville	.40
Kentucky	Fort Scott	86	25	Gray Hawk	27	8	Ulysses 1 SE	5.92	Horton	.58
Louisiana	Gilbertsville KY Dam	86	26	3 Stations	46	10+	Barren River Lake	6.93	Buckhorn Lake	1.37
Maine							2 Stations	2.71	LSU Dean Lee Exp Station	1.60
Maryland	2 Stations	88	22	Cumberland 2	19	5	Orono	2.27	Harris Stations	.56
Massachusetts	2 Stations	90	11+		28	10	Frostburg 2	6.11	Crisfield Somers Cove	1.24
Michigan	Chester 2	89	22	Chester 2	70	10	Hardwick	3.30	Borden Brook Reservoir	.99
Minnesota	Cornell 4 WSW	97	22+	University	15	16+	Alberta Ford For Center	4.18	Sault Ste Marie WSO	.80
Mississippi	2 Stations	96	27	2 Stations	30	9	Prescott	7.48	Wendell Airport	.10
Missouri	3 Stations	96	27	3 Stations	30	9	Gulfton Naval Center	17.63	New Albany	1.31
Montana							Joseph	4.94	Unionville	1.01
Nebraska	2 Stations	95	20	Opheim 10 N	15	8	Saint Ignatius	8.19	Wolfpoint	.00
Nevada	Genoa 2 W	95	20	Nenzel 20 S	17	8	Randolph 6 SSW	4.96	Arnold 1 E	.82
New Hampshire	Sunrise Manr Las Vegas	103	20	Mount Washington	7	25	Jiggs 3 ENE Zaga	7.4	Sunrise Manr Las Vegas	1
New Jersey	Concord WSO AP	92	2	Mount Washington	30	10	Mount Washington	2.55	Concord WSO AP	.86
New Mexico	1 Station	91	31	Lambertville	30	10	Lambertville	4.17	Sussex 1 SE	1.14
New York							Canton	4.28	2 Stations	.00
North Carolina	Hudson State School	80	23	Old Forge	24	7	New York Ave V Brklyn	3.49	Gouverneur 3 NW	.36
North Dakota	2 Stations	94	29+	1 Station	26	10+	Low Lake 1 SW	4.79	Estimates	.79
Ohio	106	106	106	Moffit 3 SE	14	8	Fulcrum 1 ENE	5.04	4 Stations	.00
Oklahoma	1 Station	91	3	3 Stations	25	10+	London Waterworks	7.59	Gallipolis	1.60
Oregon	5 Stations	99	21	2 Stations	31	9	Mangum Research Station	16.99	Jay Tower	2.65
Pennsylvania	Ontario KSRV	94	21	Sprague River	17	23	Brightwood	4.96	The Dalles	.19
Rhode Island	Warren	92	24	2 Stations	22	8	Ebensburg Sewage Plant	8.11	Paupack 2 WNW	.86
South Carolina	2 Stations	97	10+	Kingston	54	24+	Pico Del Este	28.19	Arecibo 2 SE	3.85
South Dakota	North Foster 1 E	87	23		31	10	North Foster 1 E	1.86	Kingston	1.64
Tennessee							Simms Water Plant	10.08	Winnshoro 1 W	1.10
Texas	2 Stations	99	22	Deerfield 4 NW	10	13	Deerfield 4 NW	5.06	2 Stations	.22
Utah	Camp Crook	91	28	Tazewell	29	10+	Lawrenceburg Filt Plant	10.49	2 Stations	1.89
Vermont	Castolon	110	30	Lipscomb	30	9	Derby 1 S	18.60	Presidio	1
Virginia	2 Stations	92	22+	Blowhard Mtn Radar	8	24	Alta	6.60	Monument Valley Miss	.38
Washington							Danville	3.02	Newfane	.82
West Virginia	3 Stations	92	3	2 Stations	27	10+	Ashland	7.00	Staffordsville 3 ENE	1.49
Wisconsin	Stony Creek	97	30	Dorothea AES	66	12	Truman Field FAA AP	8.22	2 Stations	1.09
Wyoming	Truman Field FAA AP	93	11	Rainier Paradise R S	23	23	Tolt South Fork Reservoir	4.86	Dallesport FAA AP	.10
	Diablo Dam	91	30+	2 Stations	20	10+	Wellsburg Water Trtmt Plant	7.15	Iaeger	.80
	4 Stations	92	22	Tower Falls	15	15	Dodge	6.35	Washington Island	.69
							La Barge 4 WNW	7.29		.61

AVR 1951

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# CLIMATOLOGICAL DATA

## METRIC UNITS

1997

State and Station	Elevation (ground)	Pressure		Temperature						Precipitation						Wind				No. of days (sunrise to sunset)		Sky cover, tenths (sunrise to sunset)						
		Station	Sea level	Average			Departure from normal	Highest	Lowest	No. of days		Average relative humidity	Total	mm	Greatest in 24 hours	25 mm or more	With thunderstorms	Maximum depth on ground	Snow, ice pellets				Speed		Direction	Date		
				Average maximum	Average minimum	Average				Max 32.2 °C or above	Min. 0 °C or lower									Resultant speed	Resultant direction							
																							m	mb			mb	
ALABAMA	1872	1011.4	1011.4	17.5	6.2	11.9	-1.1	24.7	22	-9.1	13	0	6.6	127	13	1	5.6	1	1.7	17	17	16.1	11 27	7	15	6	5.4	
	1872	1011.4	1011.4	17.5	6.2	11.9	-1.1	24.7	22	-9.1	13	0	6.6	127	13	1	5.6	1	1.7	17	17	16.1	11 27	7	15	6	5.4	
	1872	1011.4	1011.4	17.5	6.2	11.9	-1.1	24.7	22	-9.1	13	0	6.6	127	13	1	5.6	1	1.7	17	17	16.1	11 27	7	15	6	5.4	
	1872	1011.4	1011.4	17.5	6.2	11.9	-1.1	24.7	22	-9.1	13	0	6.6	127	13	1	5.6	1	1.7	17	17	16.1	11 27	7	15	6	5.4	
	1872	1011.4	1011.4	17.5	6.2	11.9	-1.1	24.7	22	-9.1	13	0	6.6	127	13	1	5.6	1	1.7	17	17	16.1	11 27	7	15	6	5.4	
ALASKA	1476	1009.4	1009.4	22.2	7.8	16.1	-1.7	30.6	22	1.9	11	0	2.2	30	14	5	0	0	1.7	12	12	13.0	15 27	7	10	14	7	3.2
	1476	1009.4	1009.4	22.2	7.8	16.1	-1.7	30.6	22	1.9	11	0	2.2	30	14	5	0	0	1.7	12	12	13.0	15 27	7	10	14	7	3.2
	1476	1009.4	1009.4	22.2	7.8	16.1	-1.7	30.6	22	1.9	11	0	2.2	30	14	5	0	0	1.7	12	12	13.0	15 27	7	10	14	7	3.2
	1476	1009.4	1009.4	22.2	7.8	16.1	-1.7	30.6	22	1.9	11	0	2.2	30	14	5	0	0	1.7	12	12	13.0	15 27	7	10	14	7	3.2
	1476	1009.4	1009.4	22.2	7.8	16.1	-1.7	30.6	22	1.9	11	0	2.2	30	14	5	0	0	1.7	12	12	13.0	15 27	7	10	14	7	3.2
ARIZONA	1420	1011.7	1011.7	21.9	7.7	14.6	-1.2	31.1	27	1.7	11	0	0	5	19	2	0	0	0.7	16	16.2	58 27	7	10	14	6	6.4	
	1420	1011.7	1011.7	21.9	7.7	14.6	-1.2	31.1	27	1.7	11	0	0	5	19	2	0	0	0.7	16	16.2	58 27	7	10	14	6	6.4	
	1420	1011.7	1011.7	21.9	7.7	14.6	-1.2	31.1	27	1.7	11	0	0	5	19	2	0	0	0.7	16	16.2	58 27	7	10	14	6	6.4	
	1420	1011.7	1011.7	21.9	7.7	14.6	-1.2	31.1	27	1.7	11	0	0	5	19	2	0	0	0.7	16	16.2	58 27	7	10	14	6	6.4	
	1420	1011.7	1011.7	21.9	7.7	14.6	-1.2	31.1	27	1.7	11	0	0	5	19	2	0	0	0.7	16	16.2	58 27	7	10	14	6	6.4	
ARKANSAS	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
CALIFORNIA	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
CONNECTICUT	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
DELAWARE	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
DISTRICT OF COLUMBIA	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
FLORIDA	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
GEORGIA	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0	10	0	0	6	22	1	0	0	0.7	25	11.6	2 26	7	10	14	6	6.4	
	2	1011.6	1011.6	22.0	11.8	15.8	1.2	27.8	25	5.0</																		

# CLIMATOLOGICAL DATA

METRIC UNITS

MAY 1982

State and Station	Elevation (ground)	Pressure		Temperature						Precipitation						Wind				No of days (sunrise to sunset)		Sky cover, tenths (sunrise to sunset)											
		Station	Sea level	C	F	Average maximum	Average minimum	Average	Highest	Lowest	Date	Max 32° or above	Min. 0° or lower	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	No. of days 25 mm. or more				With thunderstorms	Total	Maximum depth on ground	Snow, ice pellets	Resultant speed	Resultant direction	Speed (1.6 kilometers)	Direction	Date	Clear, 0-3	Partly cloudy, 4-7
INDIANA																																	
COPT. WATER	241	684.1	1015.6	21.4	69.4	15.5	6.2	10.6	30.6	0.0	8	0	1	7.8	64	66	-2.4	32	6	6	0	0	0	0	0.7	24	15.2	11	11	14	14	86	86
INDIANAPOLIS	241	581.1	1015.6	23.9	75.0	17.8	1.0	10.6	30.6	2.9	1	0	0	6.9	61	57	-2.4	32	10	7	0	0	0	0	0.4	24	13.0	20	11	14	14	49	57
GREENSBORO	241	684.1	1015.6	22.9	73.2	16.7	2.1	10.6	30.6	2.9	1	0	0	11.1	74	57	-2.4	32	11	4	0	0	0	0	0.4	24	13.5	10	11	14	14	42	57
INDIANA																																	
COPT. WATER	241	684.1	1015.6	21.4	69.4	15.5	6.2	10.6	30.6	0.0	8	0	1	7.8	64	66	-2.4	32	6	6	0	0	0	0	0.7	24	15.2	11	11	14	14	86	86
INDIANAPOLIS	241	581.1	1015.6	23.9	75.0	17.8	1.0	10.6	30.6	2.9	1	0	0	6.9	61	57	-2.4	32	10	7	0	0	0	0	0.4	24	13.0	20	11	14	14	49	57
GREENSBORO	241	684.1	1015.6	22.9	73.2	16.7	2.1	10.6	30.6	2.9	1	0	0	11.1	74	57	-2.4	32	11	4	0	0	0	0	0.4	24	13.5	10	11	14	14	42	57
INDIANA																																	
COPT. WATER	241	684.1	1015.6	21.4	69.4	15.5	6.2	10.6	30.6	0.0	8	0	1	7.8	64	66	-2.4	32	6	6	0	0	0	0	0.7	24	15.2	11	11	14	14	86	86
INDIANAPOLIS	241	581.1	1015.6	23.9	75.0	17.8	1.0	10.6	30.6	2.9	1	0	0	6.9	61	57	-2.4	32	10	7	0	0	0	0	0.4	24	13.0	20	11	14	14	49	57
GREENSBORO	241	684.1	1015.6	22.9	73.2	16.7	2.1	10.6	30.6	2.9	1	0	0	11.1	74	57	-2.4	32	11	4	0	0	0	0	0.4	24	13.5	10	11	14	14	42	57
INDIANA																																	
COPT. WATER	241	684.1	1015.6	21.4	69.4	15.5	6.2	10.6	30.6	0.0	8	0	1	7.8	64	66	-2.4	32	6	6	0	0	0	0	0.7	24	15.2	11	11	14	14	86	86
INDIANAPOLIS	241	581.1	1015.6	23.9	75.0	17.8	1.0	10.6	30.6	2.9	1	0	0	6.9	61	57	-2.4	32	10	7	0	0	0	0	0.4	24	13.0	20	11	14	14	49	57
GREENSBORO	241	684.1	1015.6	22.9	73.2	16.7	2.1	10.6	30.6	2.9	1	0	0	11.1	74	57	-2.4	32	11	4	0	0	0	0	0.4	24	13.5	10	11	14	14	42	57
INDIANA																																	
COPT. WATER	241	684.1	1015.6	21.4	69.4	15.5	6.2	10.6	30.6	0.0	8	0	1	7.8	64	66	-2.4	32	6	6	0	0	0	0	0.7	24	15.2	11	11	14	14	86	86
INDIANAPOLIS	241	581.1	1015.6	23.9	75.0	17.8	1.0	10.6	30.6	2.9	1	0	0	6.9	61	57	-2.4	32	10	7	0	0	0	0	0.4	24	13.0	20	11	14	14	49	57
GREENSBORO	241	684.1	1015.6	22.9	73.2	16.7	2.1	10.6	30.6	2.9	1	0	0	11.1	74	57	-2.4	32	11	4	0	0	0	0	0.4	24	13.5	10	11	14	14	42	57
INDIANA																																	
COPT. WATER	241	684.1	1015.6	21.4	69.4	15.5	6.2	10.6	30.6	0.0	8	0	1	7.8	64	66	-2.4	32	6	6	0	0	0	0	0.7	24	15.2	11	11	14	14	86	86
INDIANAPOLIS	241	581.1	1015.6	23.9	75.0	17.8	1.0	10.6	30.6	2.9	1	0	0	6.9	61	57	-2.4	32	10	7	0	0	0	0	0.4	24	13.0	20	11	14	14	49	57
GREENSBORO	241	684.1	1015.6	22.9	73.2	16.7	2.1	10.6	30.6	2.9	1	0	0	11.1	74	57	-2.4	32	11	4	0	0	0	0	0.4	24	13.5	10	11	14	14	42	57
INDIANA																																	
COPT. WATER	241	684.1	1015.6	21.4	69.4	15.5	6.2	10.6	30.6	0.0	8	0	1	7.8	64	66	-2.4	32	6	6	0	0	0	0	0.7	24	15.2	11	11	14	14	86	86
INDIANAPOLIS	241	581.1	1015.6	23.9	75.0	17.8	1.0	10.6	30.6	2.9	1	0	0	6.9	61	57	-2.4	32	10	7	0	0	0	0	0.4	24	13.0	20	11	14	14	49	57
GREENSBORO	241	684.1	1015.6	22.9	73.2	16.7	2.1	10.6	30.6	2.9	1	0	0	11.1	74	57	-2.4	32	11	4	0	0	0	0	0.4	24	13.5	10	11	14	14	42	57
INDIANA																																	
COPT. WATER	241	684.1	1015.6	21.4	69.4	15.5	6.2	10.6	30.6	0.0	8	0	1	7.8	64	66	-2.4	32	6	6	0	0	0	0	0.7	24	15.2	11	11	14	14	86	86
INDIANAPOLIS	241	581.1	1015.6	23.9	75.0	17.8	1.0	10.6	30.6	2.9	1	0	0	6.9	61	57	-2.4	32	10	7	0	0	0	0	0.4	24	13.0	20	11	14	14	49	57
GREENSBORO	241	684.1	1015.6	22.9	73.2	16.7	2.1	10.6	30.6	2.9	1	0	0	11.1	74	57	-2.4	32	11	4	0	0	0	0	0.4	24	13.5	10	11	14	14	42	57
INDIANA																																	
COPT. WATER	241	684.1	1015.6	21.4	69.4	15.5	6.2	10.6	30.6	0.0	8	0	1	7.8	64	66	-2.4	32	6	6	0	0	0	0	0.7	24	15.2	11	11	14	14	86	86
INDIANAPOLIS	241	581.1	1015.6	23.9	75.0	17.8	1.0	10.6	30.6	2.9	1	0	0	6.9	61	57	-2.4	32	10	7	0	0	0	0	0.4	24	13.0	20	11	14	14	49	57
GREENSBORO	241	684.1	1015.6	22.9	73.2	16.7	2.1	10.6	30.6	2.9	1	0	0	11.1	74	57	-2.4	32	11	4	0	0	0	0	0.4	24	13.5	10	11	14	14	42	57
INDIANA																																	
COPT. WATER	241	684.1	1015.6	21.4	69.4	15.5	6.2	10.6	30.6	0.0	8	0	1	7.8	64	66	-2.4	32	6	6	0	0	0	0	0.7	24	15.2	11	11	14	14	86	86
INDIANAPOLIS	241	581.1	1015.6	23.9	75.0	17.8	1.0	10.6	30.6	2.9	1	0	0	6.9	61	57	-2.4	32	10	7	0	0	0	0	0.4	24	13.0	20	11	14	14	49	57
GREENSBORO	241	684.1	1015.6	22.9	73.2	16.7	2.1	10.6	30.6	2.9	1	0	0	11.1	74	57	-2.4	32	11	4	0	0	0	0	0.4	24	13.5	10	11	14	14	42	57
INDIANA																																	
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INDIANAPOLIS	241	581.1	1015.6	23.9	75.0	17.8	1.0	10.6	30.6	2.9	1	0	0	6.9	61	57	-2.4	32	10	7	0	0	0	0	0.4	24	13.0	20	11	14	14	49	57
GREENSBORO	241	684.1	1015.6	22.9	73.2	16.7	2.1	10.6	30.6	2.9	1	0	0	11.1	74	57	-2.4	32	11	4	0	0	0	0	0.4	24	13.5	10	11	14	14	42	57
INDIANA																																	
COPT. WATER	241	684.1	1015.6	21.4	69.4	15.5	6.2	10.6	30.6	0.0	8	0	1	7.8	64	66	-2.4	32	6	6	0	0	0	0	0.7								







CLIMATOLOGICAL DATA  
METRIC UNITS

## way 1141

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## MAY 1961

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## HEATING DEGREE DAYS

(Base 65°F.)

MAY 1980

State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month
	This month	Period July through this month			This month	Period July through this month			This month	Period July through this month			This month	Period July through this month	
ALABAMA				IDAHO				NEBRASKA				TENNESSEE			
BIRMINGHAM	8	3019	2508	BOISE	257	5316	5736	GRAND ISLAND	176	4400	6385	BRISTOL	76	4492	4798
BIRMINGHAM	14	2688	2944	LEWISTON	218	4817	5760	LINCOLN	133	6162	6196	CHATTANOOGA	38	1670	3505
MOBILE	21	3612	3302	POCATELLO	411	6620	6924	NORFOLK	174	6656	6944	KNOXVILLE	32	3603	3478
MOBILE	1	1647	1684					NORTH PLATTE	166	6189	6678	MEMPHIS	7	3143	3227
MONTGOMERY	2	2103	2269	ILLINOIS				OMAHA (EPPELY)	158			NASHVILLE	38	3869	3696
ALABAMA				CAIRO U	28	3975	3833	OMAHA (NORTH)	129	6252	6568	OAK RIDGE	63	4231	3944
ANCHORAGE	592	9253	10599	CHICAGO O HARE	198	6454	6452	SCOTT'S BLUFF	215	6239	6683				
ANCHORAGE	474	6222	6735	WOLLAKE	129	6575	6375	VALENTINE	231	7029	7227	TEXAS			
BARBERS	1470	18137	19305	PEORIA	123	6402	6081	NEVADA				ABELINE	10	2547	2610
BARTER ISLAND	1473	15850	19067	ROCKFORD	184	7185	6810	ELKO	410	5876	7297	AMARILLO	146	4631	4737
BETHEL	682	12149	12801	SPRINGFIELD	91	5732	5544	ELY	539	6885	7573	AUSTIN	0	1663	1713
BETHTLES	821	14084	15655	INDIANA				LAS VEGAS	32	2262	2601	BROWNSVILLE	0	655	650
BIG DELTA	380	11361	13441	EVANSVILLE	81	5040	4624	RENO	319	5294	5877	CORPUS CHRISTI	0	916	930
COLD BAY	726	9022	9277	FORT WAYNE	190	6652	6186	WINNEMICA	290	5570	6480	DALLAS FT WORTH	6	2456	2382
FAIRBANKS	476	11996	14134	INDIANAPOLIS	93	5928	5566					DEL RIO	0	1345	1523
GULFANA	577	11847	13605	SOUTH BEND	147	5950	5827	NEW HAMPSHIRE				EL PASO	19	2727	2678
HOMER	674	8839	9875	IOWA				CONCORD	290	7178	7302	GALVESTON	0	1311	1224
JUNEAU	477	7466	8653	DES MOINES	124	6247	6684	MT WASHINGTON DR	919	13140	13269	HOUSTON INTERCON	0	1585	1434
KING SALMON	716	10386	11153	CUBUQUE	173	7066	7028	NEW JERSEY				LUBBOCK	48	3410	3545
KODIAK	611	7529	8401	SIOUX CITY	170	6730	6920	ATLANTIC CITY	145	5209	4927	MIDLAND	34	2847	2621
KOTZEBUE	812	14075	15394	WATERLOO	203	7097	7376	ATLANTIC CITY L	115	4496	4772	PORT ARTHUR	0	1561	1518
MC GRATH	513	12676	14202	KANSAS				NEWARK	62	4649	5034	SAN ANGELO	11	2476	2240
NGC	668	12524	11740	LANCOPOLIS	143	5676	5601	TRENTON U	74	4723	4947	SAN ANTONIO	0	1488	1570
ST. PAUL ISLAND	87	6476	10396	DOODGE CITY	130	5468	5025	NEW MEXICO				VICTORIA	0	1374	1227
TALKEETNA	977	10423	11402	GOODLAND	254	6119	6064	ALBUQUERQUE	139	4179	4292	WACO	4	2369	2058
UNALASKA	617	8911	10131	TOPEKA	129	5428	5230	CLAYTON	245	5258	5169	WICHITA FALLS	18	3055	2904
VALDEZ	598	7886	9074	WICHITA	116	4490	4680	ROSWELL	53	3552	3697	UTAH			
YAKUTAT				KENTUCKY				NEW YORK				SALT LAKE CITY	379	6046	6330
ARIZONA				COVINGTON	92	5526	5061	ALBANY	190	6571	6949	VERMONT			
FLAGSTAFF	596	7262	7103	LEXINGTON	85	5001	4721	BINGHAMTON	214	6901	7210	BURLINGTON	204	7157	7813
PHOENIX	3	1419	1752	LOUISVILLE	68	4702	4647	BUFFALO	240	6543	6869	VIRGINIA			
TUCSON	210	4776	4719	LOUISIANA				NEW YORK L	67	4446	4848	LYNCHBURG	65	4308	4233
WINLOW	0	545	1005	BATON ROUGE	0	1696	1670	NEW YORK KENNEDY	106	5042	5175	NORFOLK	58	3527	3488
YUMA				LAKE CHARLES	0	1663	1498	NEW YORK LA GUARDIA	74	4749	4909	RICHMOND	47	3665	3939
ARKANSAS				NEW ORLEANS	0	1465	1465	ROCHESTER	195	6612	6673	ROANOKE	78	4327	4307
FORT SMITH	27	3704	3336	SHREVEPORT	4	2330	2167	SYRACUSE	194	6465	6632	WALLOPS ISLAND	85	4118	4233
LITTLE ROCK	15	3049	3354	MAINE				NORTH CAROLINA				WASHINGTON			
NO. LITTLE ROCK	25	3398	3588	CARIBOU	470	8878	9472	ASHEVILLE	65	4033	4223	OLYMPIA	371	5462	5333
CALIFORNIA				FORTLAND	347	7203	7392	CAPE HATTERAS R	73	2799	2731	QUILLAYUTE	443	5176	5657
BAKERSFIELD	44	1643	2185	MARYLAND				CHARLOTTE	27	3436	3218	SEATTLE	270	4234	4594
BISHOP	236	4337	4275	BALTIMORE	74	4519	4729	GREENSBORO	65	3856	3825	SEATTLE-TACOMA	329	4647	5018
BLUE CANYON	441	5375	5507	MASSACHUSETTS				RALEIGH	33	3564	3514	SPOKANE	283	6235	6691
CLARK U	358	3584	4385	BLUE HILL OBS R	244	6169	6281	WILMINGTON	21	2675	2433	STAMPEDE PASS R	633	8617	8926
CLARK U	46	2243	2451	BOSTON	184	5543	5594	NORTH DAKOTA				WALLA WALLA L	159	4742	4786
FRESNO	82	1073	1583	WORCESTER	246	6650	6787	BISMARCK	211	8442	8922	YAKIMA	190	5757	5915
LONG BEACH	141	1050	1748	PICHIGAN				FARGO	206	8966	9174	WEST VIRGINIA			
LOS ANGELES U	75	635	1220	ALPENA	74	8124	8368	WILLISTON	237	8351	9026	BECKLEY	196	5743	5576
MT SHASTA R	381	5539	5712	DETROIT	156	6923	6976	OHIO				CHARLESTON	106	4854	4580
OAKLAND	207	2071	2795	DETROIT METRO	191	6642	6783	AKRON	149	6264	6191	ELKINS	210	6177	5912
RED BLUFF	55	2257	2680	FLINT	250	6923	6976	CINCINNATI ABN O8	64	5162	4837	PLATINUM	53	4768	4613
SACRAMENTO	107	2652	2823	GRAND RAPIDS	189	6474	6757	CLIVELAND	223	6371	6114	PARKERSBURG L	102	5113	4809
SAN DIEGO	33	590	1455	HOUGHTON LAKE	286	8045	8227	COLUMBUS	133	5731	5689	WISCONSIN			
SAN FRANCISCO	261	2595	2922	LANSING	229	7060	6854	DAYTON	139	5987	5628	GREEN BAY	227	7715	8007
SAN FRANCISCO U	291	2262	2886	MUSKOGEE	277	6969	6826	WANSFIELD	217	6563	5794	LA CROSSE	155	7232	7378
SANTA MARIA	286	2334	2886	SAULT STE MARIE	342	8873	7993	TOLEDO	199	6603	6349	MAISON	255	7642	7658
STOCKTON	54	2228	2791	MINNESOTA				YOUNGSTOWN	213	6654	6384	MILWAUKEE	259	6958	7354
COLORADO				CULUTH	326	9213	9562	OKLAHOMA CITY	24	3753	3695	WYOMING			
ALAMOSA	174	8556	8438	INTERNATIONAL FALLS	257	10199	10379	TULSA	22	3549	3680	CASPER	406	7606	7408
COLORADO SPRINGS	351	6444	6370	MINNEAPOLIS	184	7695	8094	ASTORIA	388	4476	4540	CHEYENNE	424	7114	7099
DENVER	247	5974	6436	ROCHESTER	204	7794	8149	BURNS U	410	6705	7007	LANDER	350	7714	7719
GRAND JUNCTION	195	5412	5585	ST CLOUD	227	8569	8783	EUGENE	361	4619	4604	SHERIDAN	312	7312	7540
PUEBLO	214	5570	5366	MISSISSIPPI				MEDFORD	266	4287	4836				
CONNECTICUT				JACKSON	3	2473	2300	PENDLETON	267	5528	5170				
BRIDGEPORT	149	5430	5437	MERIDIAN	1	2466	2288	PORTLAND	232	4169	4664				
HARTFORD	146	6176	6326	MISSOURI				SALEM	344	4673	4719				
DELAWARE				COLUMBIA REGIONAL	92	5389	5067	SEXTON SUMMIT R	524	5813	6138				
WILMINGTON	83	4816	4940	KANSAS CITY	98	5430	5342	PENNSYLVANIA							
DIST. OF COLUMBIA	69	4653	5005	ST JOSEPH	93	5995	5408	ALLENTOWN	87	5286	5906				
WASHINGTON DULLES	28	3640	4111	ST LOUIS	54	4890	4740	ELIE	299	6539	6771				
WASHINGTON NATIONAL				SPRINGFIELD	109	4519	4560	HARTFORD	103	5236	5224				
FLORIDA				MONTANA				PHILADELPHIA	72	4798	4865				
APPALACHICOLA U	0	1430	1361	BILLINGS	155	6196	7134	PITTSBURGH	172	6064	5904				
DAYTONA BEACH	0	869	897	GLASGOW	175	7862	8818	SCRANTON	137	5838	6245				
FORT MYERS	0	347	457	GREAT FALLS	267	6740	7490	WILLIAMSPORT	119	5805	5958				
JACKSONVILLE	0	1414	1327	HAVRE	206	7363	8541	RHODE ISLAND							
KEY WEST	0	73	64	HELENA	704	7421	7996	BLOCK ISLAND	242	5118	5689				
MIAMI	0	200	256	KALISPELL	299	7447	8305	PROVIDENCE	158	5521	5936				
ORLANDO	0	637	733	MILES CITY	156	7010	7772	SOUTH CAROLINA							
PENSACOLA	0	1529	1578	MISSOULA	318	7066	7730	CHARLESTON L	17	2241	2146				
TALLAHASSEE	0	1736	1563					COLUMBIA	27	3075	2598				
TAMPA	0	604	718					GRNVILLE-SPRABRG	27	3307	3163				
WEST PALM BEACH	0	378	269					SOUTH DAKOTA							
GEORGIA								ABERDEEN	421	7996	8524				
ATHENS	12	2860	2975					HURON	193	7440	7983				
ATLANTA	3	2605	2095					RAPID CITY	251	6678	7190				
AUGUSTA	17	2725	2547					SIOUX FALLS	243	7380	7773				
COLUMBUS	3	2184	2378												
MAKON	3	2133	2240												
ROME	7														
SAVANNAH	7	1894	1952												

(Base 65°F.)

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# STORM SUMMARY

MAY 1980

STATE	TORNADOES					HAILSTORMS				WINDSTORMS				LIGHTNING				@HEAVY SNOWSTORMS AND BLIZZARDS				# ICE STORMS				o ALL OTHER			
	NUMBER	DAYS	DEATHS	INJURIES	† DAMAGE	DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE					
								PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS								
Alabama	5	1		1	5			3	3		1	5	4			4										4	5		
Arizona	1	1										3																	
Arkansas																4													
California	1	1			4			3																					
Connecticut																	3												
Colorado	8	8			5			4	2			5				4									3	3			
Delaware																													
Florida	13	6		6	6				6			6	6		3	5									1				
Georgia	10	2		2	3			4	6			4	4			2									3	5	2		
Hawaii																													
Idaho																													
Illinois	1	2			4				2			5	2		1														
Indiana	1	1	1		2							3	2																
Iowa	4	2			5			4	5			6	4			5													
Kansas	12	3		1	4			7	7			6	6												5	5			
Kentucky								4	5			5	4	2	2														
Louisiana	1	1	2	5	6					2		6				4							1		7	7			
Maine												3				2													
Maryland & DC												3																	
Massachusetts																4													
Michigan	1	1	5	9	7					3	5	4				3									2	2			
Minnesota	1	1		6				6	6			4				4									2	2			
Mississippi	7	3		12	7					3		5		1		5									5	2			
Missouri	6	1		30	7				4			5	4			3	2												
Montana	1	1			5							5																	
Nebraska	10	3		2	6			5	7		3	6	5		1	2	2								7	6			
Nevada																													
New Hampshire																3													
New Jersey																													
New Mexico									4							2									4	2			
New York								3			1	4				4									3				
North Carolina	3	1		5					2		1	4	2																
North Dakota	1	1		4				3	5			5	4			5									5				
Ohio	2	2		5			2	8	6			7				5													
Oklahoma	9	1		2	6		1	6	7			6	5			5	5					1		6	7	2			
Oregon								2	2			2	2			2	2												
Pennsylvania	1	3							2		3	6				5									3	2			
Puerto Rico												2	2			2									2	2			
Rhode Island																													
South Carolina	5	1		32	6																								
South Dakota	15	2		4				6	2			5	2												2	2			
Tennessee	1	1		3	5						1	4	2			3													
Texas	44	12		8	7		5	7	7		15	7	6	4	4	6						3	9	7	6				
Utah																													
Vermont								4				4													1	4			
Virgin Islands	1	1		3				2	3			4				3													
Washington	1	1																							5	5			
West Virginia												4				4										4			
Wisconsin		1		5				4	4			4	3			5													
Wyoming		1		2				2	2			2	2			2	2	1	2	2									



# RAWINSONDE DATA

Average monthly values

ALBUQUERQUE, NM 1003 MB												SILVER CITY, NM 936 MB												ANDERSON, TX 980 MB												EL PASO, TX 1007 MB												EL PASO, TX 1007 MB																			
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.s.																			
SFC	31	86	10.7	7.7	24	5	31	1,610	5.1	-1.7	10	1.0	31	1,471	11.2	6.2	23	1	31	45	5.1	1.9	16	2	31	37	5.1	1.9	16	2	31	37	5.1	1.9	16	2	31	37	5.1	1.9	16	2	31	37	5.1	1.9	16	2																			
1000	20	142	11.4	8.8	23	1.0																																																													
950	31	501	11.3	3.8	29	3																																																													
900	31	992	9.8	2.0	10	4.6																																																													
850	31	1,465	6.7	-2.0	30	5.1																																																													
800	31	1,960	3.4	-3.1	30	6.4	31	1,987	11.4	-2.4	16	5																																																							
750	31	2,481	1.6	-7.4	30	8.2	31	2,519	8.0	-5.0	24	5.5																																																							
700	31	3,033	-1.4	-13.1	58	9.8	31	3,064	4.2	-7.4	18	6.0																																																							
650	31	3,608	-4.5	-16.1	50	10.9	31	3,638	-1.0	-10.0	24	6.2																																																							
600	31	4,246	-8.0	-20.1	29	12.4	31	4,316	-5.1	-15.1	25	10.3																																																							
550	31	4,917	-11.4	-24.7	29	13.8	31	4,984	-7.7	-20.4	24	12.6																																																							
500	31	5,640	-16.6	-29.4	28	15.4	31	5,723	-14.4	-27.4	24	14.4																																																							
450	31	6,404	-21.8	-35.0	29	17.1	31	6,513	-18.1	-33.2	24	15.8																																																							
400	31	7,281	-28.1	-40.0	29	19.3	31	7,375	-26.4	-39.4	24	16.8																																																							
350	31	8,226	-36.3	-43.7	29	21.9	31	8,329	-33.7	-45.2	24	19.1																																																							
300	31	9,279	-43.4	-46.3	29	22.7	31	9,389	-42.0	-50.6	24	19.1																																																							
250	31	10,444	-51.6		29	22.8	31	10,600	-50.4		22	20.4																																																							
200	31	11,916	-54.9		29	21.9	31	12,077	-55.7		25	24.4																																																							
175	31	12,768	-55.2		29	18.0	31	12,848	-56.1		25	23.8																																																							
150	31	13,750	-54.4		29	15.9	31	13,866	-56.4		25	19.1																																																							
125	31	14,917	-55.5		29	13.4	31	15,016	-55.2		25	16.6																																																							
100	31	16,150	-57.0		30	11.5	29	16,408	-62.4		26	11.4																																																							
80	31	17,744	-57.0		30	7.3	29	17,785	-62.4		26	5.5																																																							
70	31	18,590	-56.8		31	5.1	29	18,610	-61.8		24	2.6																																																							
60	31	19,569	-56.1		32	3.4	29	19,565	-61.1		22	1.8																																																							
50	31	20,732	-56.1		32	1.8	27	20,708	-59.7		18	1.1																																																							
40	31	22,166	-52.7		07	2.0	25	22,115	-57.0		06	1.2																																																							
30	31	24,038	-50.2		07	2.3	25	23,964	-52.6		04	1.2																																																							
25	31	25,251	-48.7		07	2.6	25	25,149	-50.4		08	1.0																																																							
20	31	26,706	-47.7		07	2.6	23	26,611	-48.4		08	1.0																																																							
15	31	28,620	-46.2		07	2.6	23	28,515	-46.4		08	1.0																																																							
10	31	31,389	-38.1		09	4.0	15	31,244	-40.7		7	2.1																																																							
7								33,698	-36.4																																																										

ATHENS, GA 989 MB												PACIFIC ISLAND, AK 1021 MB												PACIFIC ISLAND, AK 1017 MB												REDFIELD, AK 1000 MB												RISHMARCK, ND 988 MB																																																																																																																																																																																											
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Speed m.p.s.																																																																																																																																																																																											
SFC	29	244	15.4	13.4	31	8	31	1,849	-4.4	-17.7	08	7.6	30	15	-10.1	-13.7	08	6.4	31	39	4.1	-1.1	11	-1	31	503	6.1	-4.1	11	1.0																																																																																																																																																																																																													

## Average monthly values

CHARLESTON. 5

- 16 -



## Average monthly values

- 17 -



## Average monthly values

## Average monthly values

- 19 -



## Average monthly values

MAY 1980

SPokane, WA 930 WA	Tampa Bay, FL 1517 MA	Topeka, KS 982 MA	Truk, Caroline Is. 1010 MA	Tucson, AZ 922 MA
-----------------------	--------------------------	----------------------	-------------------------------	----------------------



## Average monthly values

•AYCROSS, GA

W. F. 57 - 211 - 100 - 100 - 100 - 100

WILSON, A. 1968

WINSLOW, AZ

УДК 72.01.01.01

1008

- 21 -

## SOLAR RADIATION INTENSITIES

Tabulated in langleys per minute on a surface normal to the direction of the sun.

MAY 1944

## NET RADIATION

Net radiation in langley's per day (8 a.m. to 8 a.m.) at Palmer, Alaska.

Date, . . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langley's, . .	.16	.159	.90	.16	.94	.56	.73	.117	.61	.151	.96	.115	.154	.117	.74	.160	.108	.185	.11	.185	.49	.59	.137	.116	.37	.122	.31	.84	.116	.140	.76	.107



# REFERENCE NOTES

**OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES:** Dates in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

- + And also on an earlier date or dates.
- D Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snowfall.

**CLIMATOLOGICAL DATA - METRIC UNITS:** Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

- B Number of days maximum 21.1°C. or above for Alaskan Stations.
- Y Peak Gust.
- + And also on an earlier date or dates.
- U Indicates Urban site.
- R Indicates Rural site.
- Ø Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

- 1 foot = 0.3048 meters
- °F. = 9 x °C + 32
- 1 inch = 25.4 millimeters
- 1 mile per hour = 0.447 meters per second

**HEATING DEGREE DAYS:** Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

**COOLING DEGREE DAYS:** Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

## STORM SUMMARY:

- Ø Includes crop damage.
- C Crop damage.
- \* No occurrence of storms or unusual weather phenomena reported.
- @ Includes heavy sleet storm.
- # Freezing drizzle and freezing rain, commonly known as glaze.
- Ø For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.
- ± No Storm Data Report received for this State.
- ◇ Report Incomplete.
- \* Damages are placed in categories varying from 1 to 9 as follows:
  - 1 Less than \$50
  - 2 \$50 to \$500
  - 3 \$500 to \$5,000
  - 4 \$5,000 to \$50,000
  - 5 \$50,000 to \$500,000
  - 6 \$500,000 to \$5 Million
  - 7 \$5 Million to \$50 Million
  - 8 \$50 Million to \$500 Million
  - 9 \$500 Million to \$5 Billion

## RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, G.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Dew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Dew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Dew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygrometers. These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

- \* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.
- + Observations for these stations are scheduled at 0000 G.C.T.
- † Dew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Dew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Dew Point temperatures replaced Relative Humidity January 1967.

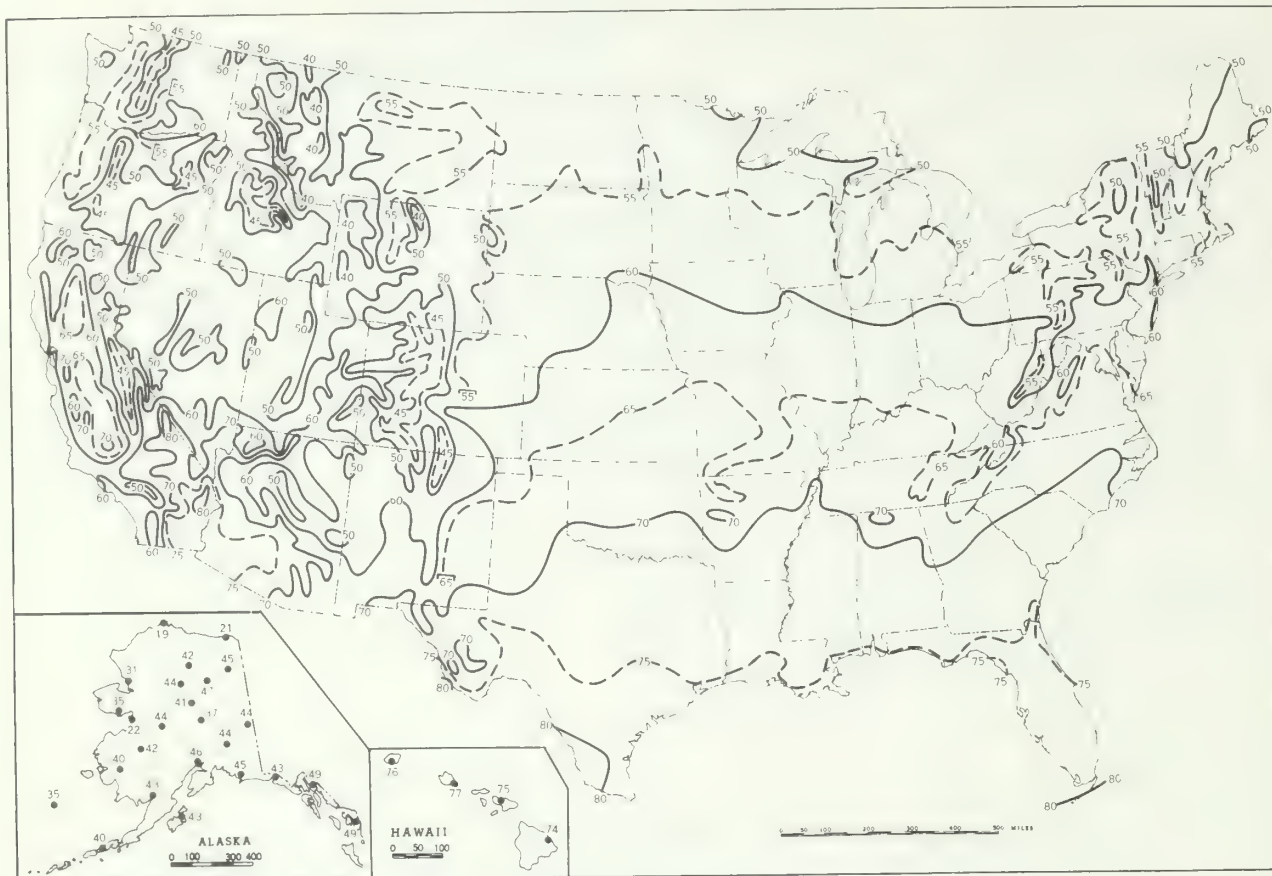
**SOLAR RADIATION INTENSITIES:** Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

☁ Clouds Present	☁ Moderate Dust	HM Moderate Haze	KS Slight Smoke
* Values corresponding to true solar noon	DS Slight Dust	HS Slight Haze	Y Moderate Haze-indeter-
BD Blowing Dust	F Fog	- Intense Haze-indeterminable	minable
~ Blowing Sand	GF Ground Fog	- Smoke	~ Sand
D Dust	H Haze	~ Intense Smoke	S Slight Haze-indeter-
~ Intense Dust	HI Heavy Ice	~ Moderate Smoke	minable

**NET RADIATION:** The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of sod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.

Chart 1. A. Normal Daily Average Temperature (°F. 1941-70), May.



B. Temperature Departure from 30 - Year Mean (°F 1941-70), May 1980

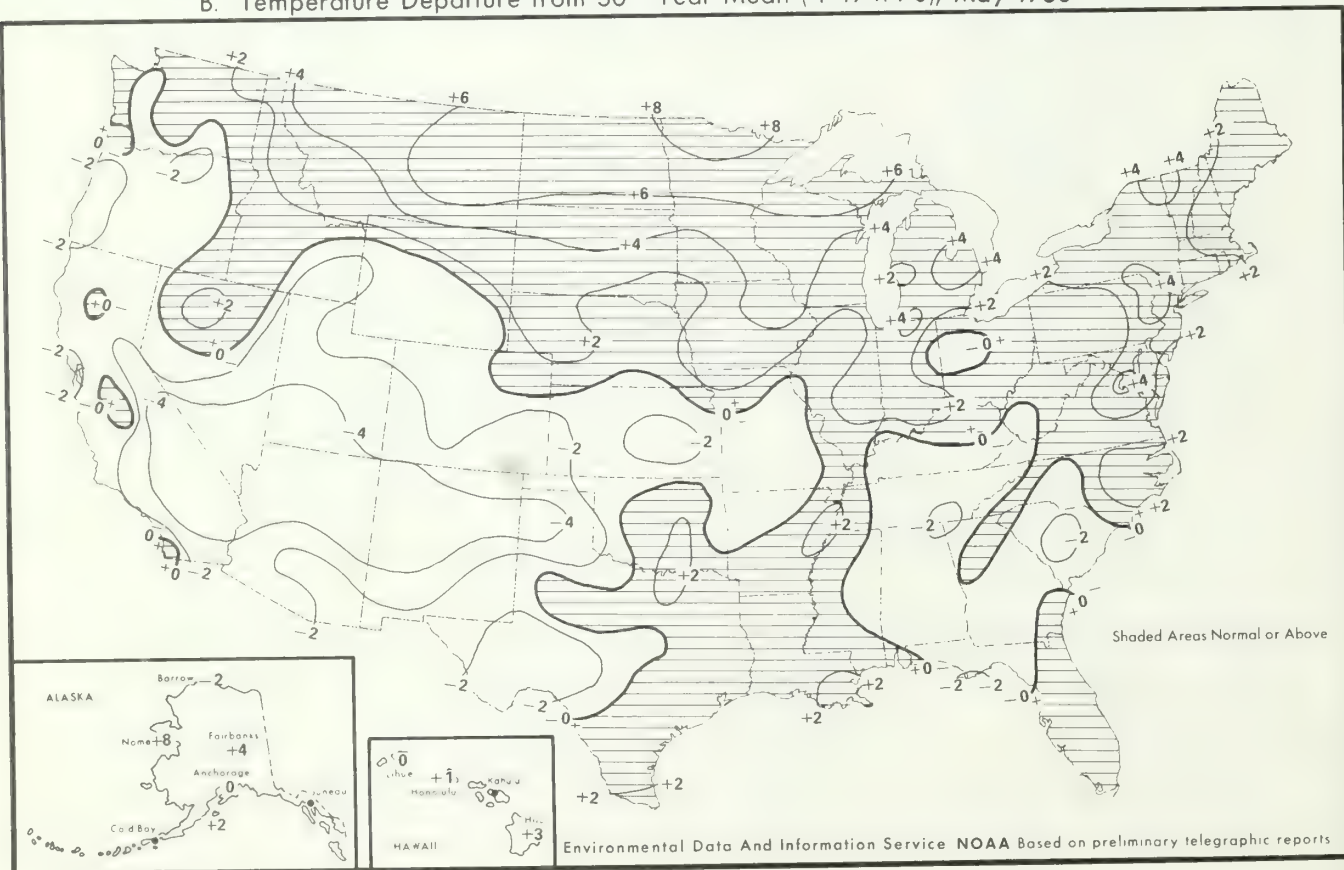
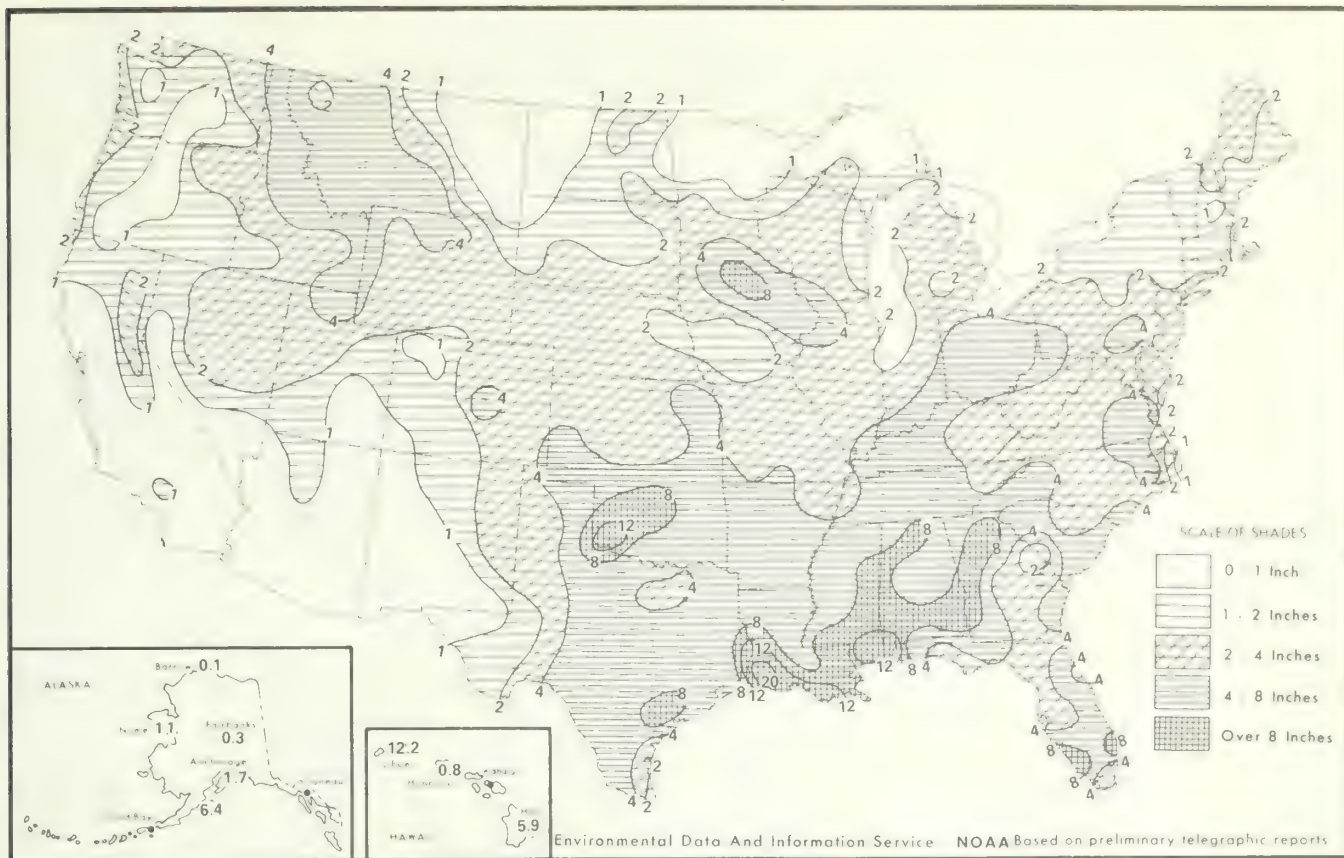
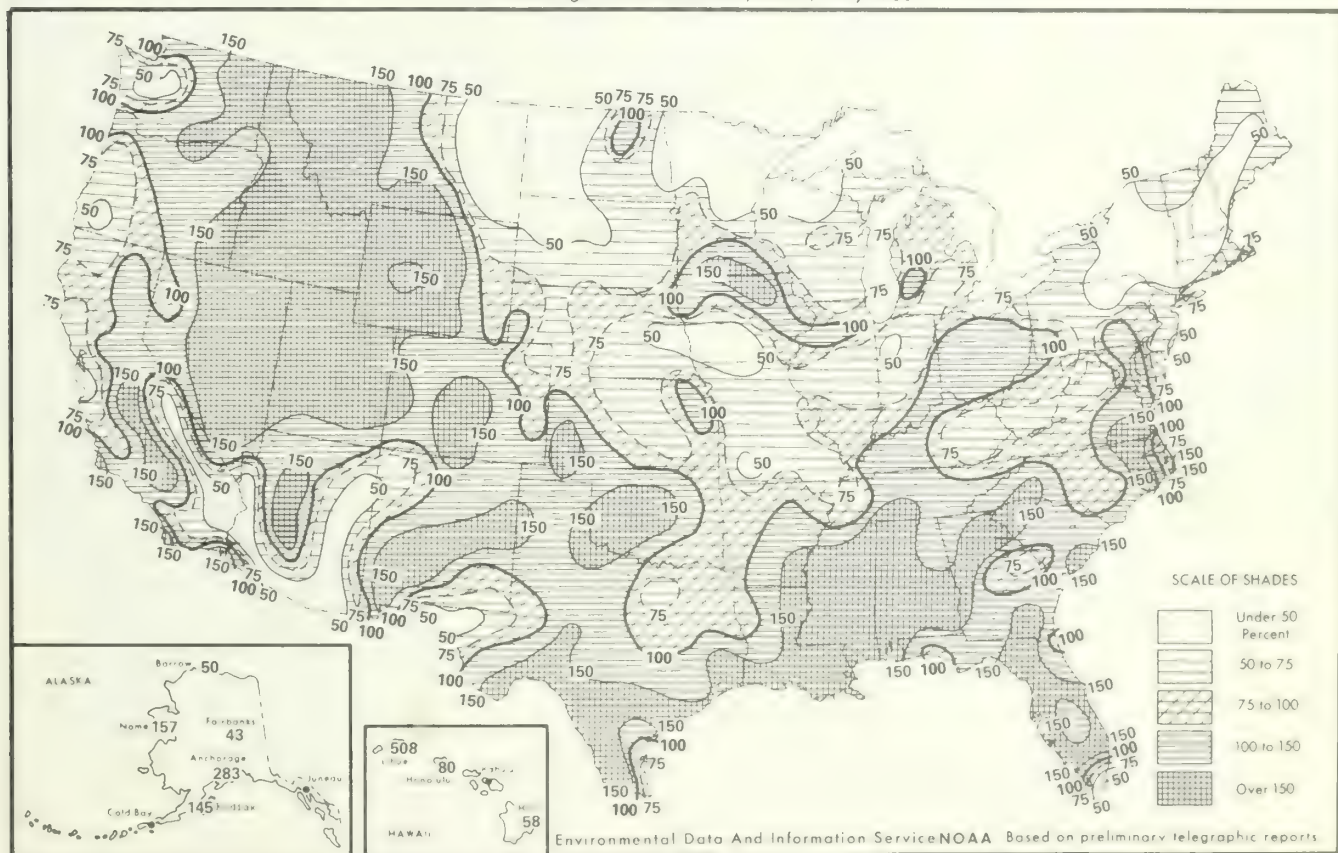


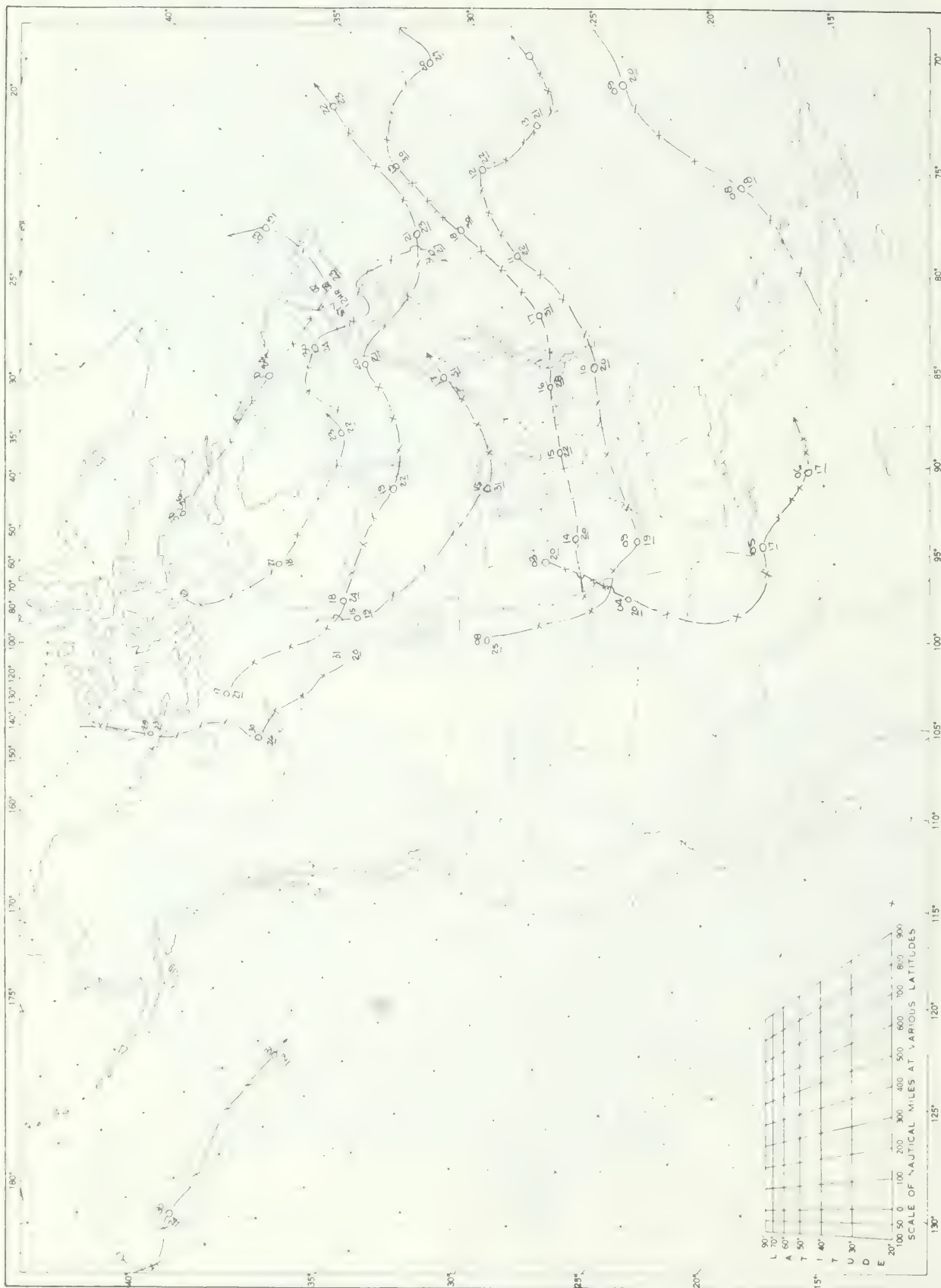


Chart II. A. Total Precipitation (Inches), May 1980



B. Percentage of Normal Precipitation, May 1980

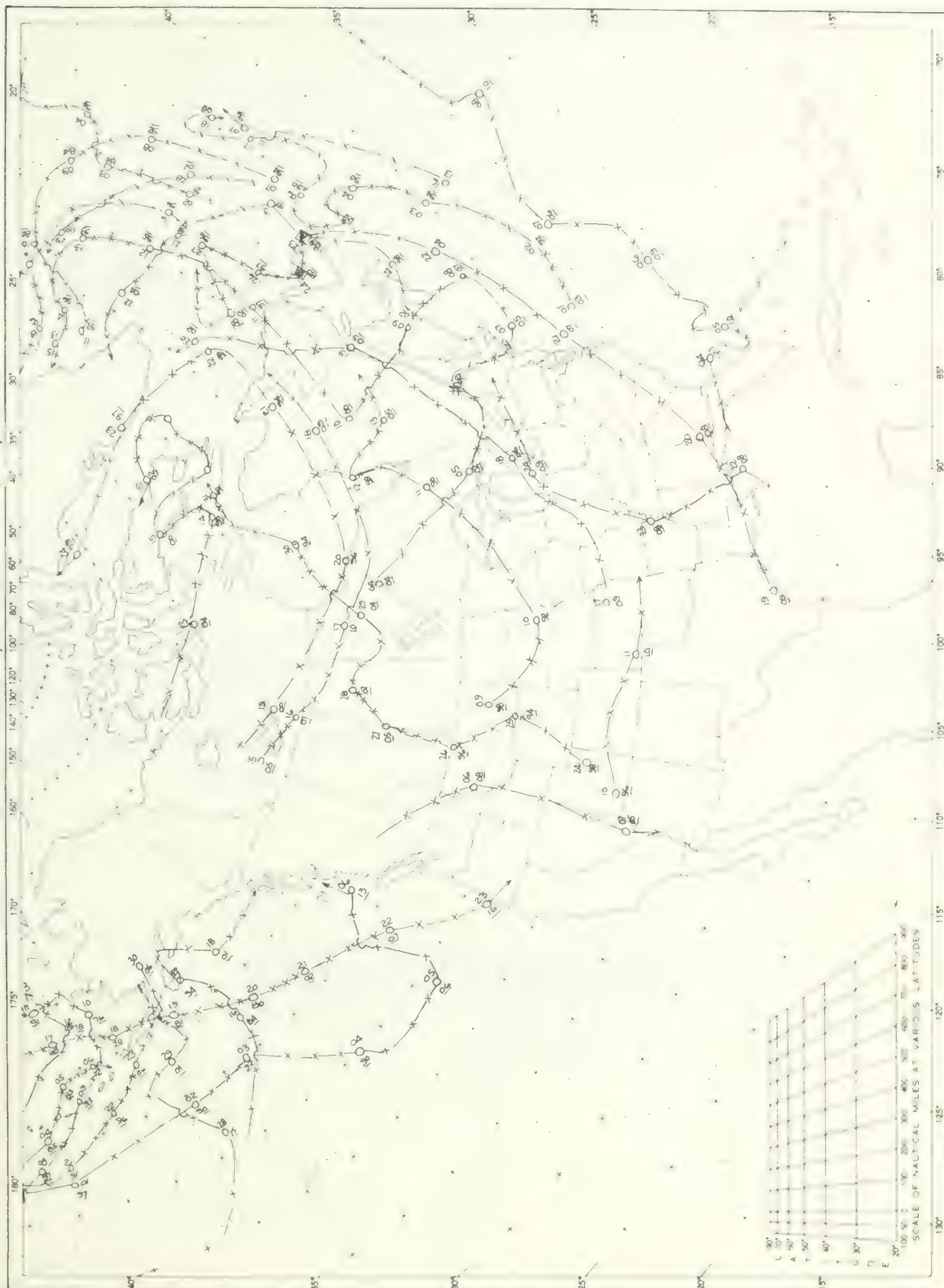




Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar. X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.



Chart IV. Tracks of Centers of Cyclones at Sea Level, May 1980



Circle indicates position of center at 700 m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar. X's indicate intervening 6 hourly positions. Squares indicate position of Stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.



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JUNE 1980

VOLUME 31

NUMBER 6

# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



"I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF  
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TION AND IS COMPILED FROM INFORMATION RECEIVED AT  
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*James B. Mitchell*

DIRECTOR  
NATIONAL CLIMATIC CENTER

**noaa**

NATIONAL OCEANIC AND  
ATMOSPHERIC ADMINISTRATION

ENVIRONMENTAL DATA AND  
INFORMATION SERVICE

NATIONAL CLIMATIC CENTER  
ASHEVILLE, N.C.

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NOTE: Late reports and corrections will be carried in the June and December issues of this publication. An explanatory page "Description of Charts" will be carried in the January and July issues.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

JUNE 1980

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist  
Environmental Data and Information Service, NOAA

**HIGHLIGHTS:** An intense, record-breaking heat wave developed over the southern and central Plains as temperatures averaged 3 to 6° above normal. Many records were shattered for the highest temperature and duration of the heat. The 117° at Wichita Falls, north central Texas, on the 28th, was the highest since records began in 1891, and El Paso measured 21 consecutive days of 100-degree heat, its longest string since observations started 93 years ago. More than 70 people, a million chickens and young turkeys and some calves died from the heat. Water and electric power needs were great, while little or no rain fell over the Southwest. Drought, which began in April, continued across most of the northern Plains as another dry spell developed in the southern Plains in June. Rainfall ranged near normal in the East except for a few dry areas in Missouri, Kentucky, Virginia, and central Arkansas.

**FIRST WEEK.** High pressure aloft over the Great Plains and the Southeast produced hot weather with temperatures averaging 3 to 6° above normal. Cool fronts moving through New England and the Northwest kept temperatures on the pleasant side, even down to 9° below the usual in Oregon. Abundant rains averaging 1 to 3 inches fell from the Dakotas to Iowa and into Pennsylvania. Some fields in the Corn Belt temporarily had standing water as soils were already moist from rains in late May. Rains were mostly light in the Southeast and soils dried. The drought in the northern Plains was relieved some by showers, but they came too late to help much of the spring wheat.

**SECOND WEEK.** The upper ridge of high pressure continued to send temperatures 3 to 7° above normal in most of the Plains and Desert Southwest. The heat

wave strengthened from southwestern Texas to Arizona. In contrast, temperatures averaged 3 to 6° below the seasonal norm in the Sierra Nevadas and 6 to 11° below the usual in the Northeast. Rains of 0.5 to 1.5 inches fell across the northern third of the Nation, Florida, and parts of Texas. More than 2 inches fell in a few spots in the northern Plains and the Corn Belt. Fair, hot weather depleted soil moisture in the South.

**THIRD WEEK.** High pressure aloft held firmly from Montana to southwestern Texas, producing temperatures 3 to 8° above the norm over most of the West. The heat wave intensified over the southern Plains and Desert Southwest, highs averaged 106° at El Paso and 108° at Yuma, southwestern Arizona. Unseasonably cool Canadian air blanketed the Northeast and supported a broad rainy frontal zone from the central Plains to the Southeast. Rains averaging 2 to 4 inches from Kansas to Georgia replenished soil moisture which was short in some sections.

**FOURTH WEEK.** The heat wave strengthened in the Desert Southwest and southern Plains and expanded into the central Plains as the high pressure aloft produced temperatures 4 to 11° above normal. Afternoon temperatures averaged 104° at Wichita, KS, and 112° at Wichita Falls, TX. Many high temperature and duration records were set. The Northeast finally warmed averaging 3 to 6° above seasonal, while the Northwest cooled by an equal amount. Rains were heavy over most of the East and light to moderate from the Great Lakes to the Pacific Northwest.

## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

JUNE 1980

STATE	Temperature					Precipitation				
	Monthly extremes					Monthly extremes				
	Station	Highest °F	Date	Station	Lowest °F	Date	Station	Greatest In.	Station	Least In.
Alabama	Whatley	108	8	Valley Head	11	10	Jackson	8.93	Greensboro	.89
Alaska	2 Stations	26+		Galbraith	15		Cape Newenham	9.20	Lonely	.05
Arizona	Bullhead City	118	29	Alpine	45		Anvil Ranch	1.68	73 Stations	.00
Arkansas	Waldron	108			45	14+	Jefferson FAA AP	9.79	Pine Bluff	.10
California	2 Stations	108	30+	White Mountain 2	9		Pit River P H 5	2.67	156 Stations	.00
Colorado	2 Stations	108	26+	Rio Grande Reservoir	15		Leroy 5 WSW	4.09	44 Stations	.00
Connecticut	2 Stations	108	27	Coventry	12		Shepaug Dam	5.05	Groton	1.80
Delaware	Bridgeville 1 NW	9	29	Newark University Farm	11		Milford 2 WSW	5.30	Bridgeville 1 NW	2.05
Florida	La Belle	108			11		Homestead Exp Sta	17.14	Everglades	.60
Georgia	2 Stations	108	17+	Blairsville Exp Sta	40	10	Gainesville	8.61	Brooklet 1 W	1.03
Hawaii	Ke Ahole Pt 68-13	9	1	Mauna Loa Slope Obs	34		Mount Waialeale 1047	49.07	9 Stations	.00
Idaho	2 Stations	108	20	2 Stations	20	14	2 Stations	4.98	Gooding Airport	.18
Illinois	Kaskaskia R Nav Lock	108			32	11	Canton 1 ESE	9.48	Mount Sterling	.93
Indiana	2 Stations	105	28+	Elkhader 5 SSW	17	11	Elkhader	11.42	Mount Vernon	2.69
Iowa	2 Stations	105	28+	Elkhader 5 SSW	17	11	Chariton	11.42	Akron	.37
Kansas	3 Stations	108	30+	Gray Hawk	11	3	Sharon Springs	9.06	Gridley	.08
Kentucky	2 Stations	98	29	Gray Hawk	11	3	Owensboro 3 W	6.43	2 Stations	.71
Louisiana	Logansport 4 ENE	102	27	Ashland 2 S	10	10	Clinton	7.21	Hackberry 8 SSW	.64
Maine	Saco	102		Oakland 1 SE	12	12	Clinton	5.27	Orono	1.44
Maryland	2 Stations	108		Oakland 1 SE	12	12	Northampton 1 W	8.86	Fatuxent River	.93
Massachusetts	2 Stations	100		Chester 2	11	11	Heath	7.46	Pembroke	1.93
Michigan	2 Stations	100		Chester 2	26	10	Bloomington	7.46	Ontonagon 6 SE	1.96
Minnesota	2 Stations	100	27	Tower 3 S	23	10	Cokato	10.27	Crookston NW Exp Sta	1.14
Mississippi	7 Stations	108		University	43	12	Charleston	4.96	Wiggins 3 SSE	.51
Missouri	Kansas City FAA AP	108		University	43	12	Memphis	8.71	Steelville 2 N	1
Montana	Moorhead 9 NE	108		Polebridge	25		Bozeman	6.32	Biddle	.68
Nebraska	2 Stations	109	27	Agate 3 E	29		Aurora	10.69	Lyman	.07
Nevada	Sunrise Manr Las Vegas	114		Diamond Valley USDA	21		Metropolis	2.42	12 Stations	.00
New Hampshire	Concord WSO AP	108		Morris Plains 1 W	32	11	Peterboro 2 S	7.81	North Stratford	1.45
New Jersey	2 Stations	108	27	Morris Plains 1 W	32	11	Belleplains St Forest	7.06	Trenton WSO CI	1.74
New Mexico	Bitter Lks WL Refuge	108		Luna Ranger Station	20		Truth or Cons FAA AP	2.65	44 Stations	.00
New York	8 Stations	108	28+	Old Forge	29	9	Albion 2 NE	8.42	Chazy	1.05
North Carolina	2 Stations	100	29+	2 Stations	12	8+	Chapel Hill 2 W	10.16	Albemarle	.44
North Dakota	Medora	108		3 Stations	12	8+	2 Stations	6.98	Laramie	.36
Ohio	Ironton	108		Dorset	17	17	Versailles	13.12	Chillicothe Abbe WSM	1.99
Oklahoma	Mangum Research Sta	108	28+		17	3	MC Curtin 1 SE	10.32	2 Stations	.27
Oregon	The Dalles	108	20	Crater Lake NPS HQ	17	4+	Brightwood	7.30	Whitehorse Ranch	.28
Pennsylvania	Marcus Hook	108		Everett	11	11	Johnstown	9.39	Philadelphia WSO AP	1.73
Puerto Rico	Dos Bocas	108		Kingston	54	16	Pico Del Este	11.14	2 Stations	.00
Rhode Island	Providence WSO AP	108		Kingston	36	12	North Foster 1 E	4.50	Block Island WSO AP	1.69
South Carolina	2 Stations	102		Conway	42	14	Beaufort 7 SW	10.01	Brookgreen Gardens	1.07
South Dakota	2 Stations	108	27	Presho 5 NW	33	8	Beaufort 7 SW	11.71	Vermillion 2 SE	.78
Tennessee	5 Stations	108	29+	Presho 5 NW	33	8	Jackson Exp Sta	9.14	Jefferson City Evap	.48
Texas	Ysleta	119		Ysleta	26	2	Paint Rock	7.00	29 Stations	.00
Utah	Saint George	107		Scofield	24	15+	Richmond	3.50	36 Stations	.00
Vermont	Vernon	96	26	Mount Mansfield	20		Readsboro 1 SE	5.59	South Hero	1.01
Virginia	Stony Creek	103	10	Burkes Garden	32	12	Moolihine 4 S	7.61	South Lake Kilby	.29
Virgin Islands	2 Stations	108	29		71	13	Water Isle	3.18	East End	1.16
Washington	Kennewick	90	20+	Glenwood 2	4	4+	Stamper Pass WSMO	6.36	Quincy 1 S	.42
West Virginia	2 Stations	98	29+	Glenwood 2	29	13+	New Cumberland	8.44	Twager	.24
Wisconsin	Prairie Du Chien	108	26	Prairie Du Chien	24	10	Devils Tower 2	12.25	Brule Island	2.32
Wyoming	2 Stations	105	26	Prairie Du Chien	20	2+	Devils Tower 2	3.81	Medicine Bow	.00

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## JUNE 1943

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JUNE 1980

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# CLIMATOLOGICAL DATA

METRIC UNITS

JUNE 1980

State and Station	Elevation (ground)	Pressure		Temperature										Precipitation						Wind				No. of days (sunrise to sunset)			Possible sunshine																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max 32.2 °C or above	Min 0 °C or lower	Average dew point	%	Total	Departure from normal	Greatest in 24 hours	25 mm or more	No. of days	Snow, ice pellets	Maximum depth on ground	Resultant speed	Resultant direction	Speed (1.6 kilometers)			Direction	Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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# CLIMATOLOGICAL DATA

## METRIC UNITS

JUNE 1980

State and Station	Elevation (ground)	Pressure		Temperature										Precipitation										Wind		No. of days (sunrise to sunset)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
		Station	Sea level	Average maximum			Average minimum			Average		Departure from normal		Highest	Date	Lowest	Date	No. of days		Average dew point		Average relative humidity	Total	mm	Departure from normal	Greatest in 24 hours	No. of days	Snow, ice pellets		Resultant speed	Resultant direction	Speed	Direction	Date	Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10	Sky cover, tenths (sunrise to sunset)	Possible sunshine																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
				C	F	C	F	C	F	C	F	C	F					C	F	C	F							C	F											C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C

## JUNE 1980

[illegible]



# MONTHLY AND SEASONAL HEATING DEGREE DAYS

(Base 65°F)

1979-1980

State and Station	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total for Season	Normals July-June
<b>ALABAMA</b>														
BIRMINGHAM C	0	0	1	116	398	615	628	668	425	140	8	0	3019	2508
BIRMINGHAM	0	0	0	101	365	588	604	655	417	144	14	0	2888	2844
HUNTSVILLE	0	0	0	152	469	714	753	793	532	178	21	1	3613	3302
MOBILE	0	0	0	43	246	424	267	454	159	52	11	0	1645	1684
MONTGOMERY	0	0	0	76	282	466	420	499	274	84	2	0	2103	2269
<b>ALASKA</b>														
ANCHORAGE	134	184	384	735	937	1704	1568	1083	1144	764	592	347	9600	10911
ANNETTE	176	177	280	490	652	854	1050	698	819	612	454	252	6474	7053
BARROW	674	579	441	1419	1660	2391	2450	2186	2380	2064	1480	815	18972	20265
BARTER ISLAND	648	675	912	1342	1591	2463	2500	2168	2438	2038	1473	858	19146	19994
BETHEL	344	361	600	952	1186	2073	2007	1532	1382	1029	682	552	12701	13243
BETTLES	144	218	655	1154	1435	2720	2472	1742	1751	1221	521	279	14362	15925
RIG DELTA	118	146	492	925	1216	2360	2267	1335	1347	775	380	218	11579	13698
COLD BAY	367	400	474	712	893	1179	1279	1143	964	876	726	569	9602	9865
FAIRBANKS	124	143	548	1004	1336	2335	2312	1415	1475	864	436	248	12244	14345
GULIKANKA	215	218	540	944	1220	2307	2164	1412	1397	849	577	302	12145	13938
HOMER	302	316	422	692	861	1432	1426	968	1014	768	638	446	9285	10364
JUNEAU	251	205	415	609	830	1187	1404	895	944	678	477	278	8178	9007
KING SALMON	214	274	441	788	1063	1872	1733	1276	1157	852	716	479	10665	11582
KODIAK	200	236	357	597	785	1177	1090	877	879	720	611	361	7890	8860
KUTCEWIE	332	282	685	1168	1400	2372	2207	1674	1679	1464	812	520	14595	16039
MC GRATH	221	242	555	958	1299	2473	2434	1539	1499	923	533	391	13067	14487
OME	435	360	606	935	1207	2134	1990	1501	1459	1229	668	631	13155	14325
ST. PAUL ISLAND	497	444	501	667	843	1030	1165	1190	1030	1016	823	608	9814	11119
TALKEETNA	152	216	470	852	1131	1949	1790	1177	1273	816	597	334	10757	11708
UNALAKLEET														
VALDEZ	267	326	449	724	948	1397	1353	1016	1032	762	617	405	9316	10545
YAKUTAT	284	308	420	609	800	1160	1249	844	916	698	598	398	8284	9533
<b>ARIZONA</b>														
FLAGSTAFF	68	157	186	526	1008	1042	1056	930	1009	684	596	158	7420	7322
PHOENIX	0	0	0	11	204	277	254	130	129	35	0	0	1040	1552
TUCSON	0	0	0	26	252	302	323	202	227	84	3	0	1419	1752
WINLOW	0	0	6	229	796	966	822	672	678	391	210	14	4784	4733
YUMA	0	0	0	2	84	169	155	58	54	23	0	0	545	1005
<b>ARKANSAS</b>														
FORT SMITH	0	0	8	123	567	699	769	772	531	208	27	0	3704	3336
LITTLE ROCK	0	0	0	80	436	588	645	693	450	142	15	0	3049	3354
NO. LITTLE ROCK	0	0	5	98	466	633	728	765	505	173	25	0	3398	3088
<b>CALIFORNIA</b>														
BAKERSFIELD	0	0	0	22	196	334	373	266	293	110	49	0	1643	2185
BISHOP	0	0	6	232	634	805	759	646	667	352	236	44	4381	4313
BLUE CANYON	94	134	82	400	657	777	694	694	848	504	481	304	5679	5704
EUREKA	208	165	92	231	369	404	511	330	500	186	388	280	3864	4679
FRESNO	0	0	0	56	323	554	473	318	343	129	46	0	2243	2650
LONG BEACH	0	0	0	21	147	204	195	116	209	99	82	11	1084	1606
LOS ANGELES	0	0	0	18	121	150	161	113	207	143	141	34	1084	1819
LOS ANGELES U	0	0	0	1	59	114	128	60	123	79	75	4	643	1245
MT SHASTA R	44	99	94	401	825	884	690	798	525	381	290	5829	5890	5890
OAKLAND	23	26	2	47	257	390	381	231	286	211	207	126	2197	2909
RED BLUFF	0	0	0	89	355	472	460	319	350	157	55	16	2273	2688
SACRAMENTO	0	0	0	100	391	558	551	373	408	164	107	29	2681	2843
SAN DIEGO	0	0	0	4	75	136	117	50	104	61	43	1	591	1507
SAN FRANCISCO	55	56	13	85	320	431	441	298	366	269	261	155	2750	3042
SAN FRANCISCO U	151	125	23	64	213	293	366	221	275	240	291	218	2480	3080
SANTA MARIA	69	35	27	97	299	330	307	254	178	252	286	183	2517	3053
STOCKTON	0	0	0	60	338	518	473	300	345	140	54	3	2231	2806
<b>COLORADO</b>														
ALAMOSA	57	127	267	590	1312	1438	1363	1029	1071	798	504	107	8663	8609
COLORADO SPRINGS	6	41	88	407	1005	969	1180	883	901	615	351	32	6478	6473
DENVER	0	20	58	347	941	939	1204	876	828	514	247	9	5983	6016
GRAND JUNCTION	0	3	0	209	945	1175	999	741	740	405	195	4	5416	5605
PUEBLO	0	8	45	299	870	959	1135	797	751	492	214	8	5576	5394
<b>CONNECTICUT</b>														
BRIDGEPORT	8	13	84	360	523	833	1025	1064	862	499	159	39	5469	5461
HARTFORD	16	30	152	442	578	965	1151	1174	916	466	146	68	6104	6350
<b>DELAWARE</b>														
WILMINGTON	4	7	31	318	458	827	1004	1009	768	307	83	35	4851	4940
<b>DIST. OF COLUMBIA</b>														
WASHINGTON DULLES	7	15	50	337	461	765	993	977	707	272	69	31	4684	5010
WASHINGTON NATIONAL	0	0	5	231	313	654	857	830	577	149	28	0	3640	4211
<b>FLORIDA</b>														
APPALACHICOLA U	0	0	0	10	147	335	326	406	152	54	0	0	1430	1361
DAYTONA BEACH	0	0	0	0	75	183	234	297	84	16	0	0	889	897
FORT MYERS	0	0	0	0	14	44	85	163	41	0	0	0	347	457
JACKSONVILLE	0	0	0	19	144	331	356	406	134	24	0	0	1414	1327
KEY WEST	0	0	0	0	0	0	12	45	16	0	0	0	73	64
MIAMI	0	0	0	0	6	10	50	95	39	0	0	0	200	206
ORLANDO	0	0	0	0	47	119	161	245	61	4	0	0	637	733
PENSACOLA	0	0	0	19	194	392	293	415	169	47	0	0	1529	1578
TALLAHASSEE	0	0	0	54	213	399	385	442	169	74	0	0	1736	1563
TAMPA	0	0	0	0	47	112	136	262	64	8	0	0	629	718
WEST PALM BEACH	0	0	0	0	11	46	96	153	50	2	0	0	358	299
<b>GEORGIA</b>														
ATHENS	0	0	6	134	295	567	609	664	430	143	12	0	2860	2975
ATLANTA	0	0	5	122	320	559	616	668	399	113	3	0	2805	3095
AUGUSTA	0	0	4	125	294	584	588	631	385	97	17	0	2725	2547
COLUMBUS	0	0	1	59	255	475	440	529	301	91	3	0		
MACON	0	0	3	79	221	461	441	534	321	70	3	0	2133	2240
ROME	0	0	0	195	428	667	706	751	497	207	33	0		
SAVANNAH	0	0	0	41	183	438	436	489	257	43	7	0	1894	1952
<b>HAWAII</b>														
HONOLOULU	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KAHULUI	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LIHUE	0	0	0	0	0	0	0	0	0	0	0	0	0	0

# MONTHLY AND SEASONAL HEATING DEGREE DAYS

(Base 65°F)

1974-1975

State and Station	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total for Season	Normals July-June
<b>IDAHO</b>														
BOISE	5	2	28	126	403	899	1076	725	736	367	247	187	5884	6831
LEWISTON	10	0	14	201	819	124	1122	730	473	274	118	88	5440	5440
POCATELLO	1	10	68	422	1090	1100	1245	876	488	507	415	184	6824	7063
<b>ILLINOIS</b>														
CHICAGO	0	0	4	134	495	727	856	898	417	217	26	0	4271	4271
CHICAGO (O'HARE)	18	19	62	742	722	967	1281	1254	595	558	178	83	6137	6137
CHICAGO (MIDWAY)	2	17	61	767	726	951								
OLINE	5	12	95	418	871	1027	1280	1324	568	481	129	27	6602	6185
ROCKFORD	7	15	70	421	804	1022	1275	1300	907	474	123	26	6428	6098
SPRINGFIELD	0	9	50	123	684	898	1146	1249	857	421	95	8	5740	5558
<b>INDIANA</b>														
EVANSVILLE	0	1	28	290	614	815	982	1103	756	367	41	10	5050	4824
FORT WAYNE	8	31	94	440	756	1037	1240	1294	1001	561	10	65	6717	6725
INDIANAPOLIS	1	11	87	384	705	929	1125	1224	897	474	93	36	5964	5577
SOUTH BEND	1	17	73	353	672	928	1172	1195	908	487	147	58	6008	6062
<b>IOWA</b>														
PURDINGTON	7	16	54	759	762	1004								
DES MOINES	1	10	57	139	401	1031	1281	1263	932	408	124	9	6256	6740
DUBUQUE	4	27	110	449	873	1087	1383	1356	1048	516	173	28	7094	7277
SIoux CITY	1	13	81	457	922	1075	1339	1287	965	419	170	11	6741	6563
WATERLOO	2	13	70	431	875	1111	1418	1394	1067	493	203	24	7121	7415
<b>KANSAS</b>														
CONCORDIA	1	10	22	233	788	909	1184	1154	847	381	143	6	5682	5623
DODGE CITY	0	7	27	237	816	940	1171	996	780	364	130	3	5471	5046
GOELAND	0	24	49	337	905	967	1251	936	921	534	254	16	6135	6115
TOPEKA	0	4	46	267	741	908	1123	1173	744	344	129	3	5431	5243
WICHITA	0	0	10	156	690	838	1038	1063	727	318	116	0	4452	4687
<b>KENTUCKY</b>														
COVINGTON	1	14	60	346	616	887	1080	1182	814	434	92	24	5550	5070
LEXINGTON	0	5	40	707	574	833	1005	1057	721	371	88	17	5018	4729
LOUISVILLE	0	0	19	244	534	792	969	1021	713	342	68	8	4710	4640
<b>LOUISIANA</b>														
BATON ROUGE	0	0	0	44	306	465	379	433	225	44	0	0	1898	1670
LAKE CHARLES	0	0	0	25	284	400	336	376	194	48	0	0	1663	1498
NEW ORLEANS	0	0	0	13	230	396	278	385	154	38	0	0	1494	1465
SHREVEPORT	0	0	0	52	366	498	508	494	312	96	4	0	2330	2167
<b>MAINE</b>														
CARIBOU	34	146	327	612	870	1413	1543	1534	1265	664	420	200	9778	9632
PORTLAND	21	82	240	539	672	1083	1305	1284	1018	613	346	163	7366	7494
<b>MARYLAND</b>														
BALTIMORE	2	3	22	311	425	757	962	967	723	273	74	1	4525	4729
<b>MASSACHUSETTS</b>														
BLUE HILL OBS R	15	41	138	445	546	949	1187	1168	927	517	245	116	6785	6335
BOSTON	7	15	80	390	484	873	1096	1071	866	481	185	66	5609	5671
WORCESTER	25	53	180	500	614	1019	1235	1233	987	562	246	148	6798	6848
<b>MICHIGAN</b>														
ALPENA	45	107	217	630	929	1128	1396	1390	1201	779	352	281	8405	8518
DETROIT	8	26	103	459			1168	1156	1012	533	156	70		
DETROIT METRO	12	29	126	471	758	1019	1249	1233	1034	568	191	104	6796	6419
FLINT	17	36	120	477	753	1014	1282	1288	1079	607	250	154	7077	7041
GRAND RAPIDS	7	31	109	431	731	984	1230	1221	1000	541	189	106	6580	6801
HOUGHTON LAKE	48	109	196	597	893	1157	1416	1424	1233	690	286	209	8254	8347
LANSING	19	41	118	491	792	1058	1323	1308	1081	600	229	124	7184	6904
MUSKEGON	19	49	160	482	766	1039	1277	1239	1060	601	277	152	7121	6890
SAGINAW	69	134	305	696	979	1263	1541	1520	1213	711	342	117	9190	9197
<b>MINNESOTA</b>														
DULUTH	52	115	252	674	1059	1317	1745	1573	1198	702	326	201	9414	9756
INTERNATIONAL FALLS	36	74	364	862	1277	1539	1651	1636	1488	618	257	124	10223	10547
MINNEAPOLIS	0	24	105	566	902	1203	1536	1436	1165	484	184	34	7729	8159
ROCHESTER	0	47	123	540	974	1201	1533	1442	1185	543	206	53	7847	8227
ST CLOUD	8	79	220	623	1081	1297	1679	1540	1286	529	227	83	8652	8868
<b>MISSISSIPPI</b>														
JACKSON	0	0	0	98	421	580	540	570	337	124	3	0	2673	2300
MERIDIAN	0	0	0	93	374	536	469	540	325	106	3	0	2466	2388
<b>MISSOURI</b>														
COLUMBIA REGIONAL	2	4	34	261	698	897	1101	1108	803	389	92	3	5342	5078
KANSAS CITY	4	5	35	247	720	818	1118	1148	809	327	98	3	5433	5357
ST JOSEPH	0	6	42	263	720	938	1104	1148	835	341	93	1	5496	5440
ST LOUIS	0	0	16	223	610	810	1035	1071	740	331	54	0	4880	4750
SPRINGFIELD	0	1	31	184	633	726	877	941	685	332	109	1	4520	4570
<b>MONTANA</b>														
BILLINGS	2	7	44	383	937	884	1484	1033	939	324	159	46	6242	7265
GLASGOW	6	17	114	489	1179	1187	1788	1404	1145	394	175	49	7911	8969
GREAT FALLS	19	15	106	482	939	934	1538	1066	1004	370	267	148	6888	7652
HAVRE	23	13	110	495	1005	1118	1654	1239	1120	380	206	81	7444	8687
HELENA	11	15	127	428	1072	1138	1566	1148	1039	473	304	164	7585	8190
MALIBU	50	17	191	595	1071	1008	1639	1084	995	503	299	17	7665	8554
MILES CITY	1	14	66	437	1088	1107	1595	1183	1024	377	156	32	7042	7889
MISSELOIA	37	13	121	417	1140	1043	1506	1018	935	448	118	198	7284	7811
<b>NEBRASKA</b>														
GRAND ISLAND	9	10	49	366	915	978	1340	1191	946	420	176	11	6411	6420
LINCOLN	7	7	42	324	825	1007	1781	1241	912	387	133	5	6167	6218
NORFOLK	3	14	54	430	954	1046	1332	1258	964	423	174	8	6664	6981
NORTH PLATTE	4	11	52	341	975	957	1233	1102	609	439	166	10	6198	6743
OMAHA (EPPLER)	1	6	05	867	1070	1315	1290	987	440	154	4	4		
OMAHA (NORTH)	4	15	48	354	837	1016	1267	1241	945	396	179	9	6261	6651
SCOTT'S BLUFF	0	10	68	408	944	948	1295	1019	885	463	215	8	6124	6124
VALENTINE	14	24	77	478	1040	1010	1405	1199	1067	485	271	26	7055	7880

# MONTHLY AND SEASONAL HEATING DEGREE DAYS

(Base 65°F)

1979-1980

State and Station	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total for Season	Normals July-June
NEVADA														
ELMC	0	4	32	320	933	1032	1013	747	862	523	410	165	6041	7483
FLY	22	95	124	464	1005	1035	1138	866	983	617	539	208	7096	7814
LAS VEGAS	0	0	0	44	395	546	474	335	328	108	32	0	2262	2601
PEND	9	28	56	339	805	908	865	701	813	451	319	152	5446	6022
WINNEMUCCA	1	18	75	363	875	988	995	667	827	471	290	162	5732	6629
NEW HAMPSHIRE														
CONCORD	33	64	199	546	675	1098	1317	1324	1022	610	290	123	7301	7360
MT WASHINGTON OBS	430	607	715	1090	1185	1657	1867	1853	1633	1184	919	717	13857	13878
NEW JERSEY														
ATLANTIC CITY	6	19	80	341	483	830	1053	1050	808	394	145	102	5311	4946
ATLANTIC CITY U	5	3	27	275	404	708	906	931	746	376	43	43	4539	4693
NEWARK	2	4	28	289	393	763	953	987	802	366	62	24	4673	5034
TRENTON U	7	10	41	328	422	788	988	998	748	319	74	24	4747	4947
NEW MEXICO														
ALBUQUERQUE	0	0	23	148	715	840	763	595	577	379	139	2	4181	4292
CLAYTON	0	7	69	275	818	836	981	791	750	486	16	16	5274	5207
POSWELL	0	0	27	115	602	748	773	587	425	222	53	0	3552	3697
NEW YORK														
ALBANY	19	37	163	468	619	1036	1259	1303	974	503	190	106	6677	6888
BINGHAMTON	37	73	204	522	869	1040	1278	1294	1022	548	214	144	7045	7285
BUFFALO	16	35	134	455	636	973	1208	1265	1022	559	240	142	6685	6927
NEW YORK U	4	4	20	271	373	734	963	969	731	310	67	22	4468	4848
NEW YORK KENNEDY	2	6	45	713	493	827	1010	1030	823	387	106	39	5081	5184
NEW YORK LA GUARDIA	2	5	32	295	400	802	997	988	764	350	74	21	4770	4909
ROCHESTER	13	37	155	468	655	1006	1264	1306	1007	510	195	125	6737	6719
SYRACUSE	19	39	146	454	607	971	1215	1302	1007	511	194	115	6580	6678
NORTH CAROLINA														
ASHEVILLE	5	0	44	299	468	707	753	861	573	258	65	2	4035	4237
CAPE HATTERAS R	0	0	0	112	208	487	587	750	477	145	33	0	2799	2731
CHARLOTTE	1	0	14	197	357	655	726	750	538	171	27	0	3436	3218
GREENSBORO	1	2	23	239	377	719	817	834	565	212	65	7	3863	3825
RALPH	0	0	13	196	394	661	753	820	564	130	33	0	3564	3514
WILLIAMSON	0	0	2	110	239	525	543	670	445	120	21	0	2675	2433
NORTH DAKOTA														
BISMARCK	11	55	191	626	1166	1273	1744	1435	1238	492	211	58	8500	9044
FARGO	7	45	139	689	1209	1367	1808	1644	1363	493	206	61	9027	9271
WILLISTON	7	42	145	560	1190	1272	1775	1447	1216	460	237	43	8394	9161
OHIO														
AKRON	35	28	118	444	664	981	1179	1202	925	520	168	95	6359	6224
CINCINNATI ABBE OB	2	5	51	333	593	850	1037	1070	756	401	64	19	5181	4844
CLEVELAND	20	11	87	403	670	967	1218	1248	967	561	223	103	6474	6154
COLUMBUS	11	16	83	376	632	920	1099	1148	855	458	133	53	5784	5702
DAYTON	7	23	91	397	649	923	1145	1217	901	495	139	49	6036	5641
MANSFIELD	38	39	118	453	719	1018	1214	1256	956	535	217	115	6678	5818
TOLEDO	16	33	121	440	724	1009	1258	1256	1005	542	199	83	6686	6381
YOUNGSTOWN	35	37	141	445	652	987	1250	1270	1008	596	233	139	6793	6426
OKLAHOMA														
OKLAHOMA CITY	0	0	2	92	551	669	823	771	572	249	24	0	3753	3695
TULSA	0	0	0	90	525	632	812	801	513	154	22	0	3549	3680
OREGON														
ASTORIA	41	92	111	305	537	840	807	529	617	459	388	279	4755	5295
BURNS U	33	45	103	434	984	1082	1227	862	918	587	430	321	7026	7212
EUGENE	33	19	50	257	673	971	901	634	599	421	361	219	4838	4739
MEDFORD	8	2	5	203	668	776	807	556	620	376	266	121	4408	4930
PENDLETON	12	0	43	326	902	823	1210	829	728	388	267	141	5669	5240
PORTLAND	8	2	19	214	592	631	920	647	575	329	232	125	4294	4792
SALEM	24	21	76	315	691	620	905	627	627	423	344	217	4890	4852
SEXTON SUMMIT R	122	135	141	405	676	762	863	684	869	632	524	416	6229	6430
PACIFIC AREA														
GUAM TAGUAC R		0	0	0	0	0	0	0	0	0	0	0	0	0
JOHNSTON		0	0	0	0	0	0	0	0	0	0	0	0	0
KOROR R		0	0	0	0	0	0	0	0	0	0	0	0	0
MAJURO		0	0	0	0	0	0	0	0	0	0	0	0	0
PAGO PAGO		0	0	0	0	0	0	0	0	0	0	0	0	0
PONAPE R		0	0	0	0	0	0	0	0	0	0	0	0	0
TRUK MOEN ISLAND		0	0	0	0	0	0	0	0	0	0	0	0	0
WAKE		0	0	0	0	0	0	0	0	0	0	0	0	0
YAP R		0	0	0	0	0	0	0	0	0	0	0	0	0
PENNSYLVANIA														
ALLENTOWN	13	22	76	386	509	884	1058	1087	808	356	87	41	5327	5827
ERIE	36	17	84	378	634	939	1188	1275	1045	644	299	161	6700	6851
HARRISBURG	12	14	71	393	536	844	1070	1033	799	361	103	48	5284	5224
PHILADELPHIA	4	7	28	324	439	823	1021	1016	763	301	72	17	4815	4865
PITTSBURGH	23	26	111	438	601	935	1175	1177	906	500	172	71	6135	5930
PITTSBURGH U	15	15	57											
SCRANTON	34	31	120	420	568	900	1144	1175	895	414	137	94	5932	6277
WILLIAMSPORT	15	19	131	438	601	919	1141	1134	867	405	139	77	5882	5981
RHODE ISLAND														
PLOCK ISLAND	18	11	70	315	402	745	976	1011	823	505	258	74	5192	5771
PROVIDENCE	11	25	94	380	496	849	1088	1104	857	459	142	93	5614	5972
SOUTH CAROLINA														
CHARLESTON	0	0	0	68	203	500	495	555	321	82	17	0	2241	2146
CHARLESTON U	0	0	0	32	144	407	433	472	267	37	3	0	1795	1904
COLUMBIA	0	0	6	138	314	641	680	466	147	27	0	0	2598	
GRNVILLE-SPRTNBURG	0	0	9	193	362	600	647	737	532	199	27	0	3306	3163
SOUTH DAKOTA														
ABERDEEN	6	41	124	585	1068	1215	1608	1452	1213	463	221	31	8027	8617
HURON	0	32	122	574	997	1117	1485	1343	1088	489	193	29	7469	8055
RAPID CITY	3	25	64	433	952	982	1359	1094	1032	483	251	54	6732	7324
STOUC FALLS	0	28	103	512	1038	1168	1448	1349	1027	464	243	32	7412	7838
TENNESSEE														
BRISTOL	3	3	23	323	483	804	832	990	670	285	76	4	4496	4306
CHATTANOOGA	0	0	0	167	438	728	745	813	526	215	38	0	3670	3505
KNOXVILLE	0	0	0	220	407	700	715	815	529	185	32	1	3604	3478
MEMPHIS	0	0	0	76	426	598	669	733	478	156	7	0	3143	3227
NASHVILLE	0	0	6	180	487	723	777	848	571	240	38	0	3869	3696
OAK RIDGE	0	0	7	267	507	783	804	883	629	288	63	3	4234	3944



# MONTHLY AND SEASONAL HEATING DEGREE DAYS

(Base 65°F)

1970-1980

State and Station	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total for Season	Normal July-June
<b>TEXAS</b>														
ABILENE	0	0	0	43	429	530	605	496	316	118	10	0	2147	2610
AMARILLO	0	2	28	186	727	801	926	788	444	177	146	0	4631	4183
AUSTIN	0	0	0	16	278	372	425	157	168	47	0	0	1663	1780
BROWNSVILLE	0	0	0	0	99	204	108	180	51	13	0	0	655	745
CORPUS CHRISTI	0	0	0	6	131	233	195	247	74	30	0	0	916	945
DALLAS FT WORTH	0	0	0	34	370	478	597	510	339	102	6	0	2448	2382
DEL RIO	0	0	0	10	233	346	336	279	119	24	0	0	1347	1523
EL PASO	0	0	24	56	505	670	555	410	331	157	19	0	2727	2878
GALVESTON	0	0	0	7	200	302	268	348	158	28	0	0	1111	1224
HOUSTON INTERCON	0	0	0	27	297	389	308	350	169	45	0	0	1585	1434
LUBBOCK	0	0	9	104	570	690	756	592	436	205	48	0	3410	3545
MIDLAND	0	0	3	63	459	566	619	435	384	184	34	0	2847	2621
PORT ARTHUR	0	0	0	23	278	382	306	377	151	44	0	0	1561	1514
SAN ANGELO	0	0	0	57	430	542	578	453	300	105	11	0	2474	2240
SAN ANTONIO	0	0	0	15	243	306	386	333	163	42	0	0	1488	1570
VICTORIA	0	0	0	20	243	329	299	309	135	39	0	0	1374	1227
WACO	0	0	0	43	384	483	562	475	297	119	6	0	2369	2058
WICHITA FALLS	0	0	0	57	464	563	682	649	460	162	18	0	3055	2904
<b>UTAH</b>														
MILFORD	0	8	28	361	958	1050	1036	810	884	532	379	58	6104	6412
SALT LAKE CITY	0	0	7	270	846	987	964	835	723	371	250	77	5330	5983
<b>VERMONT</b>														
BURLINGTON	23	65	213	528	703	1107	1350	1771	1043	550	204	91	7248	7876
<b>VIRGINIA</b>														
LYNCHBURG	0	6	27	320	444	746	892	901	650	255	65	14	4327	4233
NORFOLK	0	0	0	190	272	616	759	872	564	196	58	2	3529	3488
RICHMOND	0	0	8	242	353	698	806	875	541	135	47	0	3667	3919
ROANOKE	3	9	49	329	458	738	806	893	656	266	78	14	4341	4307
WALLOPS ISLAND	0	0	3	203	353	671	834	948	717	304	85	15	4133	4240
<b>WASHINGTON</b>														
OLYMPIA	59	71	165	404	737	726	1027	724	702	476	371	354	5716	5510
QUILLAYUTE	157	137	147	382	625	628	905	591	661	500	443	319	5495	5951
SEATTLE	33	12	68	704	591	620	872	569	554	341	270	169	4403	4777
SEATTLE-TACOMA	27	40	86	327	628	647	929	610	634	395	329	218	4865	5185
SPOKANE	41	4	91	423	1029	918	1365	880	809	392	283	711	6446	6815
STAMPEDE PASS R	291	278	333	602	1086	1093	1425	1072	721	633	546	9163	9163	9800
WALLA WALLA U	7	0	9	223	829	737	1137	773	613	255	159	76	4818	4835
YAKIMA	29	4	59	371	919	929	1364	902	654	336	190	109	5866	6009
<b>WEST INDIES</b>														
SAN JUAN P.R.		0	0	0	0	0	0	0	0	0	0	0		0
<b>WEST VIRGINIA</b>														
BECKLEY	28	37	116	448	611	890	1053	1130	809	435	186	81	5624	5615
CHARLESTON	5	10	39	331	519	820	951	1017	707	340	104	27	4981	4590
ELKINS	39	46	130	491	652	954	1080	1203	872	500	210	111	6290	5975
HUNTINGTON	2	5	36	312	494	798	936	1033	708	351	93	16	4784	4624
PARKERSBURG U	9	7	54	346	512	658	998	1057	779	391	102	35	5148	4817
<b>WISCONSIN</b>														
GREEN BAY	14	36	166	590	928	1151	1461	1380	1165	597	227	130	7845	8098
LA CROSSE	1	37	116	535	894	1133	1438	1358	1085	480	155	15	7247	7417
MADISON	14	62	144	546	890	1112	1471	1424	1138	586	255	84	7726	7730
MILWAUKEE	20	25	70	436	797	1036	1368	1290	1063	594	259	154	7112	7444
<b>WYOMING</b>														
CASPER	0	41	118	523	1149	1116	1505	1081	1048	617	408	75	7681	7555
CHEYENNE	2	62	105	468	1058	990	1321	1027	984	673	424	65	7179	7255
LANDER	0	61	84	463	1164	1234	1578	1145	1000	595	390	94	7808	7869
SHERIDAN	6	20	120	497	1051	1044	1523	1171	1061	507	312	111	7423	7708

## (Base 65°F.)

JUN 1980

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# STORM SUMMARY

STATE	TORNADOES					HAILSTORMS				WINDSTORMS				LIGHTNING				HEAVY SNOWSTORMS AND BLIZZARDS				ICE STORMS				ALL OTHER			
	NUMBER	DAYS	DEATHS	INJURIES	DAMAGE	DEATHS	INJURIES	DAMAGE		DEATHS	INJURIES	DAMAGE		DEATHS	INJURIES	DAMAGE		DEATHS	INJURIES	DAMAGE		DEATHS	INJURIES	DAMAGE		DEATHS	INJURIES	DAMAGE	
								PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS								
Alabama	2	1			5				2	5	4		1	3															
Alaska																													
Arizona																													
Arkansas																													
California	1											4		1	5	4													
Colorado	10	1			3			4	6			3	5		3	3													
Connecticut																													
Delaware																													
Florida	11	2		2	2			2	2		3	2	2	1	1														
Georgia	2	1			5			1	3				4																
Hawaii																													
Idaho																													
Illinois	3	2		7	7			3	5		23	5	6		3	3	1												
Indiana	24	1	2	46	5			2	2	3	24	5	7		3	12	5												
Iowa	14	1		8	6			2	7		2	7	7																
Kansas																													
Kentucky	1	1						6	7			7	7																
Louisiana														1															
Maine																													
Maryland & DC	2	2		14	6			3	6	3	27	6	3		1	5													
Massachusetts																													
Michigan	4	3						3	0					1															
Minnesota	3	3						6	2		10	7	7																
Mississippi	1	2																											
Missouri								8	6		8		5			4	3												
Montana	2	2								2																			
Nebraska	16	6		26	8			8	8	13	14	8	6		1		3												
Nevada																													
New Hampshire																													
New Jersey	1	1																											
New Mexico	1	1						3	2			2	2																
New York	2	2						3	5		8	2	4		3	4													
North Carolina	1	1												1	3														
North Dakota	19	3						6	6		6	2	2			5													
Ohio	10	4		27	8			4	7	1	13				1	8													
Oklahoma	1	1					1	6	7			6	2	1	2	6													
Oregon																													
Pacific																													
Pennsylvania	9	4		14						1	33	6	4		2	2													
Puerto Rico																													
Rhode Island																													
South Carolina	1	1										4																	
South Dakota	3	3						5	5			5	6																
Tennessee	3	2						5	5		3	5	6		1	5	5												
Texas	21	9		2	6			5	5		2	5	6			5	5												
Utah																													
Vermont																													
Virginia	1	1						4	3	1	4	5		1	2														
Virgin Island																													
Washington																													
West Virginia	2	2		1	6							4																	
Wisconsin	12	4						4	5		13	5																	
Wyoming	3	1																											



## Average monthly values

JUNE 1980

[illegible]

## Average monthly values

1967

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# RAWINSONDE DATA

Average monthly values

JUNE 1966

FLINT, MI 987 MB										GRAND JUNCTION, CO 851 MB										GREAT FALLS, MT 889 MB										GREEN BAY, WI 989 MB									
Standard pressure surface mb	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg	Speed m.p.h.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg	Speed m.p.h.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg	Speed m.p.h.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg	Speed m.p.h.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg	Speed m.p.h.									
5FC	30		12.1	9.6	25	.6	30	6.96	12.9	8.6	20	2.0	30	1.472	16.2	-2.9	13	3.4	29	1.11	11.0	4.1	22	4.9	30	210	13.1	10.6	32	4.6									
1000																																							
950	30	559	14.5	9.1	28	3.4	30	997	15.1	6.8	13	2.8	30	1.462	12.2	7.8	24	3.3	29	1.007	12.7	7.3	31	3.5	30	550	14.1	8.4	29	2.8									
900	30	1,131	12.6	7.1	25	5.0	30	1,480	13.1	3.8	27	2.6	30	1.462	12.2	7.8	24	3.3	29	1.007	12.7	7.3	31	3.5	30	1,131	12.6	7.1	25	5.0									
850	30	1,494	10.2	4.2	29	5.9	30	1,989	10.4	1.4	27	3.2	30	2,007	18.7	-2.2	16	4.2	29	1,988	9.1	1.3	26	3.3	30	1,494	10.2	4.2	29	5.9									
800	30	1,894	7.9	-2.2	28	6.7	30	2,421	7.7	-2.4	24	4.5	30	2,557	15.5	-4.9	22	4.7	29	1,989	9.1	1.3	26	3.3	30	1,894	7.9	-2.2	28	6.7									
750	30	2,257	5.5	-7.2	29	8.0	30	2,821	5.7	-6.7	27	6.5	30	3,137	10.7	-8.3	24	6.7	29	2,257	5.5	-7.2	29	8.0	30	2,257	5.5	-7.2	29	8.0									
700	30	2,600	2.5	-10.3	29	9.7	30	3,088	3.2	-10.1	26	7.5	30	3,379	5.4	-11.4	24	8.2	29	2,600	2.5	-10.3	29	9.7	30	2,600	2.5	-10.3	29	9.7									
650	30	2,943	-0.6	-14.2	29	11.4	30	3,442	0.1	-14.2	23	9.1	30	3,739	5.4	-14.4	24	9.1	29	2,943	-0.6	-14.2	29	11.4	30	2,943	-0.6	-14.2	29	11.4									
600	30	3,286	-3.4	-19.0	29	13.2	30	3,793	-4.1	-19.0	23	16.1	30	4,089	-5.1	-18.7	23	13.4	29	3,286	-3.4	-19.0	29	13.2	30	3,286	-3.4	-19.0	29	13.2									
550	30	3,629	-6.2	-23.9	29	15.0	30	4,146	-6.9	-23.9	25	18.1	30	4,442	-7.8	-23.9	25	15.1	29	3,629	-6.2	-23.9	29	15.0	30	3,629	-6.2	-23.9	29	15.0									
500	30	3,972	-9.0	-28.8	29	16.8	30	4,603	-9.7	-28.8	25	21.1	30	4,899	-10.6	-28.8	25	18.1	29	3,972	-9.0	-28.8	29	16.8	30	3,972	-9.0	-28.8	29	16.8									
450	30	4,315	-11.8	-33.7	29	18.6	30	5,060	-12.5	-33.7	25	24.1	30	5,356	-13.4	-33.7	25	21.1	29	4,315	-11.8	-33.7	29	18.6	30	4,315	-11.8	-33.7	29	18.6									
400	30	4,658	-14.6	-38.6	29	20.4	30	5,517	-15.3	-38.6	25	27.1	30	5,813	-16.2	-38.6	25	24.1	29	4,658	-14.6	-38.6	29	20.4	30	4,658	-14.6	-38.6	29	20.4									
350	30	4,999	-17.4	-43.5	29	22.2	30	5,974	-18.1	-43.5	25	30.1	30	6,270	-19.0	-43.5	25	27.1	29	4,999	-17.4	-43.5	29	22.2	30	4,999	-17.4	-43.5	29	22.2									
300	30	5,340	-20.2	-48.4	29	24.0	30	6,431	-20.9	-48.4	25	33.1	30	6,727	-21.8	-48.4	25	30.1	29	5,340	-20.2	-48.4	29	24.0	30	5,340	-20.2	-48.4	29	24.0									
250	30	5,681	-23.0	-53.3	29	25.8	30	6,892	-23.7	-53.3	25	36.1	30	7,188	-24.6	-53.3	25	33.1	29	5,681	-23.0	-53.3	29	25.8	30	5,681	-23.0	-53.3	29	25.8									
200	30	6,022	-25.8	-58.2	29	27.6	30	7,353	-26.5	-58.2	25	39.1	30	7,649	-27.4	-58.2	25	36.1	29	6,022	-25.8	-58.2	29	27.6	30	6,022	-25.8	-58.2	29	27.6									
150	30	6,363	-28.6	-63.1	29	29.4	30	8,275	-29.3	-63.1	25	42.1	30	8,571	-30.2	-63.1	25	39.1	29	6,363	-28.6	-63.1	29	29.4	30	6,363	-28.6	-63.1	29	29.4									
100	30	6,704	-31.4	-68.0	29	31.2	30	8,736	-32.1	-68.0	25	45.1	30	9,032	-33.0	-68.0	25	42.1	29	6,704	-31.4	-68.0	29	31.2	30	6,704	-31.4	-68.0	29	31.2									
50	30	7,045	-34.2	-72.9	29	33.0	30	9,197	-34.9	-72.9	25	48.1	30	9,493	-35.8	-72.9	25	45.1	29	7,045	-34.2	-72.9	29	33.0	30	7,045	-34.2	-72.9	29	33.0									
0	30	7,386	-37.0	-77.8	29	34.8	30	9,658	-37.7	-77.8	25	51.1	30	9,954	-38.6	-77.8	25	48.1	29	7,386	-37.0	-77.8	29	34.8	30	7,386	-37.0	-77.8	29	34.8									

CHEENING, CO, NC 988 MB										GUADALUPE IS., MEXICO 1012 MB										GUAM, MARIANA IS. 999 MB										HILLC, HI 1017 MB										HUNTINGTON, WV 987 MB									
Standard pressure surface mb	No of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg	Speed m.p.h.	No of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg	Speed m.p.h.	No of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg	Speed m.p.h.	No of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg	Speed m.p.h.	No of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg	Speed m.p.h.	No of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg	Speed m.p.h.	No of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg	Speed m.p.h.							
5FC	30	275	17.0	14.5	18	.6	28	23	16.2	14.2	35	6.9	30	111	24.8	24.1	09	7.7	30	10	22.2	19.1	24	1.8	30	246	15.9	13.9	22	4.4																			
1000																																																	
950	30	585	18.8	13.0	18	2.6	28	562	17.9	2.4	33	5.2	30	56	23.3	21.7	09	7.7	30	602	19.0	17.9	10	2.3	30	575	18.4	11.6	24	2.4																			
900	30	1,049	16.6	9.4	18	7.1	28	1,027	16.9	-1.2	32	4.7	30	1,028	20.7	18.5	09	7.7	30	1,065	16.0	14.8	09	4.0	30	1,049	16.6	9.4	29	5.2																			
850	30	1,494	14.2	7.1	31	6.6	28	1,519	19.7	-2.5	29	5.1	30	1,522	18.1	15.1	09	7.7	30	1,522	12.1	09	4.0	30	1,494	14.2	7.1	6.3	6.9																				
800	30	2,045	11.0	1.9	30	5.8	28	2,079	18.0	-6.0	26	6.1	30	2,071	15.8	11.1	09	7.7	30	2,071	10.4	5.1	08	3.8	30	2,045	11.0	1.9	7.9																				
750	30	2,582	8.9	-3.2	29	6.5	28	2,599	14.0	-6.4	26	7.2	30	2,588	13.1	6.5	09	7.7	30	2,596	9.4	-7.5	09	4.0	30	2,582	8.9	-4.9	29	8.2																			
700	30	3,151	6.1	-7.7	29	6.8	28	3,167	11.1	-6.7	24	8.3	30	3,166	10.3	1.6	09	7.7	30	3,167	8.1	-11.5	09	3.3	30	3,151	6.1	-5.2	28	9.2																			
650	30	3,754	2.4	-11.2	29	7.1	28	3,781	6.5	-12.0	23	6.5	30	3,786	7.2	-3.8	09	7.7	30	3,775	5.4	-14.7	10	1.6	29	3,754	2.4	-8.8	29	10.0																			
600	30	4,396	-1.4	-15.3	29	8.9	28	4,432	2.1	-14.0	22	6.1	30	4,425	3.6	-0.5	09	7.7	30	4,425	2.1	-17.6	29	1.7	29	4,396	-1.4	-11.7	29	10.8																			
550	30	5,004	-5.7	-20.7	29	9.4	28	5,036	1.6	-19.4	22	10.4	30	5,136	-1.2	-12.4	08	7.7	30	5,122	-2.1	-20.8	24	3.5	29	5,004	-5.7	-16.6	29	11.6																			
500	30	5,608	-9.0	-24.2	29	10.7	28	5,677	-7.4	-23.6	22	10.6	30	5,693	-4.9	-16.4	07	4.2	30	5,672	-7.1	-22.1	24	6.1	29	5,608	-9.0	-21.1	29	12.9																			
450	30	6,228	-12.8	-28.2	29	12.2	27	6,269	-11.8	-29.5	22	11.8	30	6,274	-9.5	-22.0	07	4.2	29	6,265	-12.2	-29.2	25	9.0	29	6,228	-12.8	-26.9	29	14.2																			
400	30	6,852	-16.6	-32.1	29	13.9	27	6,898	-15.7	-35.3	23	12.5	30	6,891	-15.2	-28.2	06	2.7	29	6,852	-16.6	-35.2	25	11.9	29	6,852	-16.6	-32.1	29	16.4																			
350	30	7,476	-20.4	-36.0	29	15.6	27	7,522	-19.5	-38.0	23	13.1	30	7,522	-19.5	-35.2	04	1.8	29	7,476	-20.4	-38.0	25	14.5	29	7,476	-20.4	-36.0	29	17.7																			
300	30	8,099	-24.2	-40.0	29	17.3	27	8,145	-23.1	-42.7	23	14.6	30	8,145	-23.1	-40.0	03	1.8	29	8,099	-24.2	-42.7	25	16.3	29	8,099	-24.2	-40.0	29	19.0																			
250	30	8,722	-28.0	-44.0	29	19.0	27	8,768	-26.9	-46.4	23	16.1	30	8,768	-26.9	-44.0	03	1.8	29	8,722	-28.0	-46.4	25	18.0	29	8,722	-28.0	-44.0	29	21.3																			
200	30	9,345	-31.8	-48.0	29	20.7	27	9,391	-30.7	-50.1	23	17.8	30	9,391	-30.7	-48.0	03	1.8	29	9,345	-31.8	-50.1	25	19.7	29	9,345	-31.8	-48.0	29	23.6																			
150	30	9,968	-35.6	-52.0	29	22.4	27	10,014	-34.5	-54.2	23	19.5	30	10,014	-34.5	-52.0	0																																



# RAWINSONDE DATA

Average monthly values

LAKE CHARLES, LA										LAKE CHARLES, LA									
1012 MB										1012 MB									
Standard pressure	No. of observations	Dynamic height	Temperature	Dew Point	Direction	Speed	Resultant Wind	Dynamic height	Temperature	Dew Point	Direction	Speed	Resultant Wind	Dynamic height	Temperature	Dew Point	Direction	Speed	Resultant Wind
surface mb		meters	°C	°C	°	m/s	m/s	meters	°C	°C	°	m/s	m/s	meters	°C	°C	°	m/s	m/s
1000	30	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10
950	30	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10
900	30	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10
850	30	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10
800	30	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10
750	30	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10
700	30	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10
650	30	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10
600	30	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10
550	30	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10
500	30	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10
450	30	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10
400	30	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10
350	30	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10
300	30	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10
250	30	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10
200	30	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10
150	30	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10
100	30	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10
50	30	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10
0	30	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10	162	23.1	19.4	10	4.4	10

# RAWINSONDE DATA

Average monthly values

JUNE 1980

NOME, AK 1011 MB										NORTH CREST, AK 1011 MB										OAKLAND, CA 1012 MB										CHANDLER, AZ 1012 MB										FARGO, ND 1012 MB															
Standard pressure surface mb		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind					
5FC	30	200	15.9	14.0	15	6	29	359	14.0	9.4	23	1.2	30	39	28.2	24.9	0P	2.1	30	20	13.1	10.1	26	1.3	29	58	9.4	8.5	28	4.1	1000	27	107	4.7	3.1	16	1.7	29	176	12.4	10.0	24	1.6	30	403	17.5	14.5	10	1.2	29	111	26.7	23.0	11	6.0
950	30	567	18.3	10.8	21	2.3	29	569	14.2	9.4	27	2.7	30	534	23.8	21.6	0P	4.7	30	540	13.5	6.8	10	3.1	29	576	8.0	6.1	22	1.9	900	27	512	2.7	1.4	17	4.1	29	566	11.8	5.0	28	1.9	28	564	22.9	21.0	10	6.7						
900	30	1,029	16.1	8.3	25	2.6	29	1,028	14.2	7.9	29	5.7	30	1,006	21.2	18.7	0P	7.9	30	994	11.4	3.4	30	3.8	29	1,021	6.0	2.2	21	2.3	850	27	948	1.2	-2.1	17	4.1	30	1,014	19.2	5.1	18	2.2	29	1,034	19.5	18.0	09	6.3						
850	30	1,514	14.3	2.7	28	4.6	29	1,509	11.1	4.7	24	7.4	30	1,501	18.6	15.6	0P	9.3	30	1,469	8.4	2.9	29	4.6	29	1,488	3.9	-3.6	21	2.0	800	27	1,407	-2.5	-5.2	17	4.1	30	1,504	17.4	4.8	27	2.2	29	1,526	17.1	14.4	08	5.1						
800	30	2,024	12.4	-1.2	28	6.4	29	2,011	8.6	-2.9	6	6.0	30	2,021	16.2	12.3	0P	7.9	30	1,969	6.4	-2.6	29	6.3	29	1,979	1.5	-5.3	22	1.5	750	27	1,890	-2.7	-7.3	17	4.1	30	2,020	14.4	2.9	29	3.9	28	2,043	16.3	6.7	06	3.5						
750	30	2,563	9.4	-8.4	28	8.4	29	2,564	6.1	-5.4	29	9.4	30	2,569	13.6	8.1	0P	7.9	30	2,495	3.1	-7.6	28	8.0	27	2,497	-1.8	-9.1	21	1.5	700	27	2,400	-5.0	-9.3	19	6.0	30	2,564	11.4	-2.7	29	5.8	28	2,591	14.0	2.4	05	2.5						
700	30	3,120	7.1	-11.6	26	11.6	29	3,120	3.8	-10.1	29	11.6	30	3,127	10.7	6.1	0P	7.9	30	3,052	1.1	-11.5	28	8.3	27	3,047	-11.0	-14.0	20	1.8	650	27	2,940	-7.0	-15.1	16	7.1	30	3,137	7.1	-6.2	29	7.6	28	3,170	10.8	-3.7	04	1.6						
650	30	3,654	-10.4	-20.0	18	7.1	30	3,744	5.4	-11.0	28	9.4	29	3,697	-1.1	-17.7	29	7.9	30	3,745	4.1	-12.1	24	5.6	28	3,785	7.4	-3.7	16	1.9	600	27	3,514	-10.4	-20.0	14	7.1	30	3,745	4.1	-12.1	24	5.6	28	3,785	7.4	-3.7	16	1.9						
600	30	4,127	-13.3	-24.1	19	7.6	29	4,392	-1.1	-14.6	27	10.6	29	4,333	-3.4	-20.8	25	9.6	30	4,391	4.1	-15.4	28	10.9	28	4,434	3.8	-11.5	34	2.0	550	27	4,127	-13.3	-24.1	19	7.6	29	4,392	-1.1	-14.6	27	10.6	29	4,333	-3.4	-20.8	25	9.6						
500	30	4,783	-18.6	-27.4	20	8.5	29	4,982	-1.2	-17.4	27	11.3	29	5,014	-4.2	-25.2	26	1.2	30	5,092	4.1	-20.3	28	12.4	28	5,141	-3.3	-16.5	32	2.2	500	27	4,783	-18.6	-27.4	20	8.5	29	4,982	-1.2	-17.4	27	11.3	29	5,014	-4.2	-25.2	26	1.2						
450	30	5,488	-23.1	-32.9	20	9.5	29	5,621	-10.1	-24.3	27	12.7	29	5,747	-13.0	-28.8	25	1.6	30	5,823	-10.1	-25.2	28	13.8	28	5,897	-4.9	-20.1	30	3.4	400	27	5,251	-23.1	-32.9	20	10.5	29	5,621	-10.1	-24.3	27	12.7	29	5,747	-13.0	-28.8	25	1.6						
400	30	6,251	-28.6	-38.6	20	10.5	29	6,425	-16.1	-32.4	27	15.5	29	6,582	-18.1	-34.4	25	1.7	30	6,626	-15.9	-31.8	28	15.5	28	6,718	-9.4	-24.4	30	4.9	350	27	6,004	-28.6	-38.6	20	11.1	29	6,501	-22.4	-38.5	27	18.5	29	6,741	-24.7	-40.3	25	1.6						
350	30	7,004	-34.7	-42.5	21	11.1	29	7,501	-22.4	-38.5	27	18.5	29	7,411	-24.7	-40.3	25	1.6	30	7,523	-22.4	-38.5	28	17.5	28	7,615	-15.1	-30.3	29	6.7	300	27	6,807	-34.7	-42.5	21	13.4	29	7,407	-29.4	-44.6	27	21.0	29	8,372	-31.5	-46.1	24	23.5						
300	30	8,004	-40.6	-45.2	21	13.4	29	8,470	-29.4	-44.6	27	21.0	29	8,372	-31.5	-46.1	24	23.5	30	8,474	-29.4	-44.6	28	19.8	28	8,620	-21.4	-36.3	28	7.6	250	27	8,004	-40.6	-45.2	21	13.4	29	8,470	-29.4	-44.6	27	21.0	29	8,372	-31.5	-46.1	24	23.5						
200	30	10,743	-46.3	-52.2	22	12.5	29	11,549	-37.7	-50.5	27	23.5	29	9,439	-40.2	-46.8	24	29.1	30	9,553	-37.7	-50.5	28	23.3	29	9,735	-30.0	-44.0	29	8.4	150	27	10,743	-46.3	-52.2	22	12.5	29	11,549	-37.7	-50.5	27	23.5												
100	30	11,243	-47.3	-54.7	22	12.5	29	12,049	-47.0	-50.5	27	23.5	29	10,661	-48.5	-54.7	24	29.1	30	10,788	-46.3	-50.5	28	27.2	29	11,007	-40.2	-52.6	28	9.6	50	27	11,243	-47.3	-54.7	22	12.5	29	12,049	-47.0	-50.5	27	23.5												
0	30	12,441	-43.3	-51.7	21	6.4	29	12,234	-54.7	-57.4	27	30.0	29	12,108	-53.4	-59.6	24	30.0	30	12,240	-54.7	-57.4	28	29.7	28	12,488	-52.8	-57.4	27	11.4	0	30	12,441	-43.3	-51.7	21	6.4	29	12,234	-54.7	-57.4	27	30.0												

PEORIA, IL 992 MB										PITTSBURGH, PA 974 MB										POCAHONTE, MS 1005 MB										PORTLAND, ME 1011 MB										QUILLAYT, WA 1011 MB											
Standard pressure surface mb		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind	
5FC	30	200	15.9	14.0	15	6	29	359	14.0	9.4	23	1.2	30	39	28.2	24.9	0P	2.1	30	20	13.1	10.1	26	1.3	29	58	9.4	8.5	28	4.1	1000	27	107	4.7	3.1	16	1.7	29	176	12.4	10.0	24	1.6	30	403	17.5	14.5	10	1.2		
950	30	567	18.3	10.8	21	2.3	29	569	14.2	9.4	27	2.7	30	534	23.8	21.6	0P	4.7	30	540	13.5	6.8	10	3.1	29	576	8.0	6.1	22	1.9	900	27	948	1.2	-2.1	17	4.1	30	1,014	19.2	5.1	18	2.2	29	1,034	19.5	18.0	09	6.3		
850	30	1,514	14.3	2.7	28	4.6	29	1,509	11.1	4.7	24	7.4	30	1,501	18.6	15.6	0P	9.3	30	1,469	8.4	2.9	29	4.6	29	1,488	3.9	-3.6	21	2.0	800	27	1,407	-2.5	-5.2	17	4.1	30	1,504	17.4	4.8	27	2.2	29	1,526	17.1	14.4	08	5.1		
800	30	2,024	12.4	-1.2	28	6.4	29	2,011	8.6	-2.9	6	6.0	30	2,021	16.2	12.3	0P	7.9	30	1,969	6.4	-2.6	29	6.3	29	1,979	1.5	-5.3	22	1.5	750	27	1,890	-2.7	-7.3	17	4.1	30	2,020	14.4	2.9	29	3.9	28	2,043	16.					



## Average monthly values

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# RAWINSONDE DATA

Average monthly values

JUNE 1980

WINNEPUCCA, NV 1000 MB										WINNEPUCCA, AZ 1000 MB										YAKUTAT, AK 1017 MB										YAP, CAROLINE IS. 1008 MB									
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction tens of deg.	Speed m.p.s.									
1000	7	152	24.7	22.7	12	1.3	26	1,312	17.4	-7.7	12	1.3	30	1,447	12.2	-4.1	17	1.4	30	1,422	8.6	7.6	10	1.3	30	1,422	8.6	7.6	10	1.3									
950	10	1,071	19.4	14.4	21	1.1	26	1,493	15.9	-7.4	10	1.4	26	1,511	15.8	-3.1	20	1.5	30	1,488	3.7	-1.8	19	1.5	30	1,488	3.7	-1.8	19	1.5									
900	10	2,619	11.4	-4.6	26	1.8	26	2,633	7.4	-5.9	25	1.7	26	2,577	15.6	-5.2	24	1.6	30	2,496	-1.1	-10.1	16	1.9	30	2,578	13.6	9.3	10	6.2									
850	10	3,193	8.3	-8.5	26	1.7	26	3,094	7.1	-6.7	23	1.3	30	3,157	11.7	-9.1	23	10.6	30	3,044	-4.1	-14.3	19	2.1	30	3,158	10.6	5.7	10	6.2									
800	10	3,771	4.8	-13.5	26	2.0	26	3,889	-11.7	-11.8	23	9.2	30	3,772	7.4	-11.1	23	11.3	30	3,825	-7.3	-15.4	21	2.4	30	3,773	7.5	2.4	09	5.8									
750	10	4,351	1.2	-13.5	26	2.5	26	4,321	-6.1	-14.5	22	13.0	30	4,425	2.6	-14.1	23	12.7	30	4,244	-10.8	-22.4	22	2.7	30	4,425	3.8	-1.4	10	6.0									
700	10	4,931	-2.7	-16.4	31	3.8	26	4,988	-17.4	-21.4	22	15.3	30	5,121	-2.8	-17.6	23	14.7	30	4,908	-15.0	-24.5	23	3.0	30	5,132	4.0	-5.9	09	6.0									
650	10	5,511	-7.2	-21.1	31	3.3	26	5,721	-27.8	-27.8	22	16.5	30	5,869	-8.7	-21.6	23	15.6	30	5,621	-19.5	-26.8	23	3.4	30	5,891	-4.2	-11.8	09	5.2									
600	10	6,091	-12.0	-27.1	31	3.8	26	6,514	-28.1	-32.5	23	15.1	30	6,677	-14.0	-24.4	24	16.4	30	6,395	-25.7	-34.7	23	1.9	30	6,715	-8.6	-17.0	09	4.5									
550	10	6,671	-16.0	-33.4	30	4.0	26	7,374	-28.1	-38.0	23	22.6	30	7,561	-20.3	-34.7	24	18.8	30	7,279	-31.6	-41.7	23	4.7	30	7,620	-14.1	-24.4	09	4.6									
500	10	7,251	-20.0	-39.1	26	5.6	23	7,329	-33.4	-43.6	23	25.7	30	8,453	-27.5	-39.6	24	21.7	30	8,174	-37.5	-45.6	23	5.0	30	8,624	-20.6	-32.3	09	5.3									
450	10	7,831	-23.7	-46.1	26	5.8	27	8,750	-41.1	-47.4	23	30.2	30	9,627	-35.4	-48.2	25	26.2	30	9,720	-44.3	-49.3	24	5.9	30	9,742	-39.2	-40.0	09	4.2									
400	10	8,411	-27.4	-51.8	26	7.4	23	10,610	-44.1	-49.1	23	31.4	30	10,774	-44.0	-49.1	25	28.2	30	10,426	-49.5	-49.5	25	2.5	30	11,018	-39.4	-49.8	09	4.6									
350	10	9,001	-31.4	-54.2	26	8.4	22	12,077	-52.0	-52.0	23	30.4	30	12,333	-51.8	-51.8	25	26.8	30	11,865	-49.4	-49.4	26	4.3	30	12,504	-52.2	-52.2	10	3.9									
300	10	9,581	-35.4	-56.6	26	9.1	22	12,942	-52.7	-52.7	23	29.2	30	13,184	-51.7	-51.7	24	25.0	30	12,760	-49.2	-49.2	26	4.2	30	13,354	-59.4	-59.4	10	3.3									
250	10	10,161	-39.4	-58.6	31	9.5	22	13,818	-53.5	-53.5	23	24.0	30	14,144	-61.6	-61.6	25	23.8	30	13,772	-49.0	-49.0	27	2.7	30	14,301	-67.7	-67.7	07	3.3									
200	10	10,741	-43.4	-60.6	31	9.5	22	15,104	-56.7	-56.7	24	16.5	30	15,274	-65.1	-65.1	24	18.8	30	14,967	-50.0	-50.0	26	1.8	30	15,378	-75.0	-75.0	07	3.7									
150	10	11,321	-47.4	-62.6	31	9.5	22	16,515	-57.1	-57.1	23	15.7	30	16,612	-69.1	-69.1	24	12.8	30	16,423	-50.3	-50.3	25	1.6	30	16,655	-79.3	-79.3	08	5.1									
100	10	11,901	-51.4	-64.6	31	9.5	22	17,921	-59.4	-59.4	21	4.7	28	17,774	-67.0	-67.0	24	1.1	30	17,878	-50.5	-50.5	09	1.2	30	17,931	-75.4	-75.4	08	10.7									
50	10	12,481	-55.4	-66.6	31	9.5	22	18,763	-57.0	-57.0	17	2.4	28	18,763	-64.0	-64.0	20	2.1	30	18,751	-49.5	-49.5	09	1.2	30	18,712	-71.4	-71.4	09	13.6									
0	10	13,061	-59.4	-68.6	31	9.5	22	19,774	-56.4	-56.4	13	1.8	27	19,774	-60.6	-60.6	17	3.5	30	19,760	-49.6	-49.6	09	1.7	30	19,633	-67.4	-67.4	09	13.6									
	10	13,641	-63.4	-70.6	31	9.5	22	20,881	-54.4	-54.4	11	3.8	27	20,881	-57.4	-57.4	10	4.5	30	20,955	-49.1	-49.1	09	3.1	29	20,746	-61.9	-61.9	08	14.6									
	10	14,221	-67.4	-72.6	31	9.5	22	22,346	-52.0	-52.0	11	6.0	26	22,346	-54.6	-54.6	09	6.7	30	22,423	-48.3	-48.3	09	4.0	28	22,145	-57.7	-57.7	09	12.9									
	10	14,801	-71.4	-74.6	31	9.5	22	24,225	-50.7	-50.7	09	7.7	24	24,138	-51.7	-51.7	09	9.7	30	24,325	-46.7	-46.7	09	6.2	27	23,981	-52.7	-52.7	09	11.7									
	10	15,381	-75.4	-76.6	31	9.5	22	25,416	-44.7	-44.7	09	4.4	24	25,327	-49.4	-49.4	09	10.4	30	25,338	-45.4	-45.4	09	6.7	27	25,165	-50.2	-50.2	10	11.4									
	10	15,961	-79.4	-78.6	31	9.5	22	26,895	-47.6	-47.6	09	9.1	24	26,799	-46.8	-46.8	09	10.2	29	27,034	-43.3	-43.3	09	8.6	26	26,636	-46.7	-46.7	10	12.7									
	10	16,541	-83.4	-80.6	31	9.5	22	28,821	-42.2	-42.2	09	5.7	23	28,721	-44.0	-44.0	09	17.7	28	28,985	-40.0	-40.0	09	8.6	23	28,553	-43.5	-43.5	10	12.3									
	10	17,121	-87.4	-82.6	31	9.5	22	31,618	-37.4	-37.4	09	20.6	18	31,463	-39.2	-39.2	09	12.6	20	31,773	-34.2	-34.2	09	11.2	15	31,286	-40.9	-40.9	10	13.3									
	10	17,701	-91.4	-84.6	31	9.5	22																																

## SOLAR RADIATION INTENSITIES

Tabulated in longleys per minute on a surface normal to the direction of the sun.

## NET RADIATION

Net radiation in langley's per day (8 a.m. to 8 a.m.) at Palmer, Alaska

Date . . . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langley. . .	134	147	89	120	25	208	172	85	186	161	51	99	153					39		175	84				157	49	147			92	114	

# CORRECTIONS CLIMATOLOGICAL DATA METRIC UNITS

NOVEMBER 1979

State and Station	Elevation (ground)	Pressure		Temperature				Precipitation				Wind				No. of days (sunrise to sunset)		Sky cover, tenths (sunrise to sunset)										
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Lowest	Date	Max 32 °C or above	Min. 0 °C or lower	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours		No. of days .25 mm. or more	With thunderstorms	Maximum depth on ground	Resultant speed	Resultant direction	Speed (1.6 kilometers)	Direction	Date	No. of days (sunrise to sunset)	
ALABAMA																												
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.2	1021.1	16.3	4.0	9.6	-1.1	28.4 22	-6.1 30			0	3	5.6	73													
ALBUQUERQUE	1665	1011.20																										



# CORRECTIONS CLIMATOLOGICAL DATA METRIC UNITS

NOVEMBER 1979

State and Station	Elevation (ground)	Pressure		Temperature						Precipitation				Wind				No. of days (sunrise to sunset)	Sky cover, tenths (sunrise to sunset)		
		Station	Sea level	Average maximum		Average minimum		Average		Departure from normal		Highest		Lowest		Date					
		m	mb	C	F	C	F	C	F	C	F	C	F	C	F	C	F				
<b>COLORADO</b>																					
ALAMOSA	2297			4.2	39.6	-11.4	9.5	-6.1	21.0	-4.9	25.2	12.8	55.0	-26.7	30.0	0	30	0	30		
COLORADO SPRINGS	1877	61.7	1011.5	0.3	32.5	-7.3	18.9	-3.4	24.0	-3.5	25.1	19.4	67.0	-16.7	29.0	0	30	0	30		
FOSTER	1601	836.4	1016.5	0.3	32.5	-7.3	18.9	-3.4	24.0	-3.5	25.1	19.4	67.0	-16.7	29.0	0	30	0	30		
GRAND JUNCTION	1476	858.4	1022.5	0.3	32.5	-7.3	18.9	-3.4	24.0	-3.5	25.1	19.4	67.0	-16.7	29.0	0	30	0	30		
PUEBLO	1426			1.7	35.1	-1.5	21.1	0.7	33.3	-2.8	28.3	21.1	70.0	-14.4	30.0	0	30	0	30		
<b>CONNECTICUT</b>																					
HARTFORD	7	1019.0	1019.7	12.2	54.0	4.8	40.6	8.5	47.3	0.7	33.3	18.9	66.0	-1.7	30.0	0	4	3.3	70		
WATERBURY	57	1015.5	1019.7	12.6	54.7	2.4	36.3	7.5	45.5	2.3	36.1	21.7	71.0	-5.0	30.0	0	11	2.2	72		
<b>ILLINOIS</b>																					
SPRINGFIELD	23	1017.3	1020.4	15.2	59.4	4.3	39.7	9.8	49.6	2.2	36.0	22.8	73.0	-4.4	30.0	0	5	3.4	70		
<b>INDIANA</b>																					
INDIANAPOLIS	ME	1008.6	1020.5	16.7	62.1	2.9	37.2	9.6	49.3	2.8	37.0	26.0	78.8	-6.1	30.0	0	11	4.4	72		
WASHINGTON, D.C.	3	1015.8	1020.5	17.5	63.5	7.4	45.3	12.4	54.3	3.6	38.5	23.9	75.0	-2.2	30.0	0	1	6.4	70		
<b>MISSOURI</b>																					
ST. LOUIS	0	1015.3	1020.0	22.2	72.0	16.5	61.7	18.4	65.1	0.2	36.4	26.7	80.0	-2.6	30.0	0	1	11.7	77		
SPRINGFIELD	5	1015.0	1020.0	23.8	74.8	14.0	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
JEFFERSON CITY	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9	12.9	57.2	18.9	66.0	3.6	38.5	29.4	85.0	-1.7	30.0	0	0	14.4	77		
WARRICK	1	1015.3	1020.0	20.5	68.9																

# CORRECTIONS CLIMATOLOGICAL DATA METRIC UNITS

NOVEMBER 1979

State and Station	Elevation (ground)	Pressure		Temperature										Precipitation						Wind			No. of days (sunrise to sunset)	Sky cover, tenths (sunrise to sunset)	%																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
		Station ID	Sea level	Average maximum		Average minimum		Average		Departure from normal		Highest	Lowest	Date	Date	No. of days	Max 32.2 °C or above	Min. 0 °C or lower	Average dew point	Average relative humidity																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
				°C	°F	°C	°F	°C	°F	°C	°F	°C	°F							°C	°F	mm				mm	mm	mm	mm	mm	mm	mm																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
INDIANA	241	989.2	1016.7	8.2	47	-1.2	30	4.2	40	-0.4	31	18.5	1	-6.1	30*	0	17	0	17	79																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	

## METRIC UNITS

NOVEMBER 1979



## CORRECTIONS

NOVEMBER 1979

[illegible]

## CORRECTIONS

NOVEMBER 1979

[illegible]

## NOVEMBER 1979

## STORM SUMMARY

## CORRECTIONS

Alabama  
March 1944



# REFERENCE NOTES

## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES:

Dates in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

+ And also on an earlier date or dates.

D Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snow-fall.

CLIMATOLOGICAL DATA - METRIC UNITS: Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

B Number of days maximum 21.1°C. or above for Alaskan Stations.

Y Peak Gust.

+ And also on an earlier date or dates.

U Indicates Urban site.

R Indicates Rural site.

Ø Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

1 foot = 0.3048 meters

°F. =  $\frac{9}{5} \times ^\circ\text{C} + 32$

1 inch = 25.4 millimeters

1 mile per hour = 0.447 meters per second

HEATING DEGREE DAYS: Data from airport unless otherwise specified.

U Indicates Urban site.

R Indicates Rural site.

COOLING DEGREE DAYS: Data from airport unless otherwise specified.

U Indicates Urban site.

R Indicates Rural site.

## STORM SUMMARY:

Ø Includes crop damage.

C Crop damage.

\* No occurrence of storms or unusual weather phenomena reported.

@ Includes heavy sleet storm.

# Freezing drizzle and freezing rain, commonly known as glaze.

Ø For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.

± No Storm Data Report received for this State.

◇ Report Incomplete.

† Storm damages are placed in categories varying from 1 to 9 as follows:

1 Less than \$50

2 \$50 to \$500

3 \$500 to \$5,000

4 \$5,000 to \$50,000

5 \$50,000 to \$500,000

6 \$500,000 to \$5 Million

7 \$5 Million to \$50 Million

8 \$50 Million to \$500 Million

9 \$500 Million to \$5 Billion

## RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, G.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Dew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Dew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Dew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygrometers. These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

\* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.

+ Observations for these stations are scheduled at 0000 G.C.T.

† Dew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Dew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Dew Point temperatures replaced Relative Humidity January 1967.

SOLAR RADIATION INTENSITIES: Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

CU Clouds Present

\* Values corresponding to true solar noon

BD Blowing Dust

BN Blowing Sand

D Dust

DI Intense Dust

DM Moderate Dust

DS Slight Dust

F Fog

GF Ground Fog

H Haze

HI Intense Haze

HM Moderate Haze

HS Slight Haze

I Intense Haze-indeterminable

S Smoke

SI Intense Smoke

SM Moderate Smoke

KS Slight Smoke

M Moderate Haze-indeter-

minable

N Sand

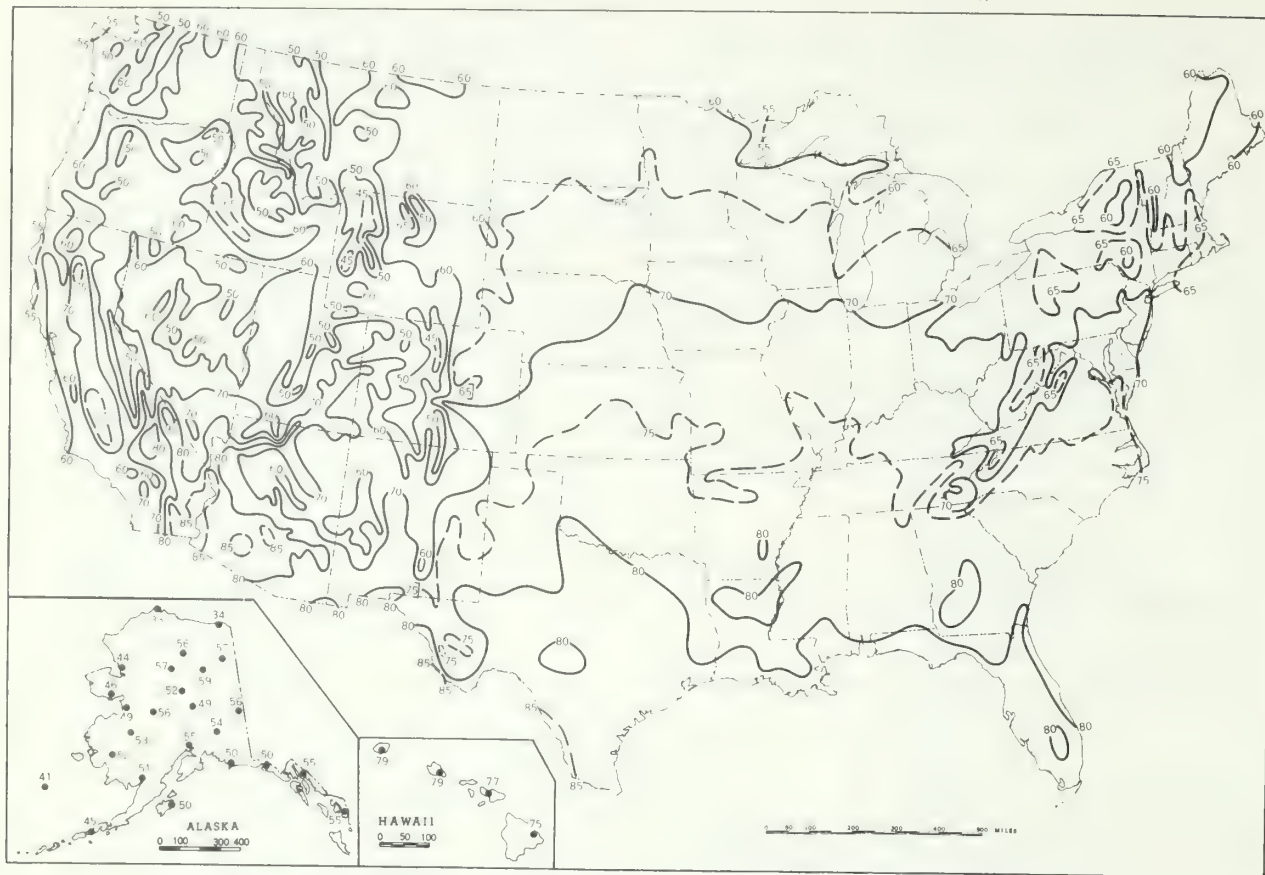
S Slight Haze-indeter-

minable

NET RADIATION: The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of sod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.

Chart 1. A. Normal Daily Average Temperature (°F. 1941-70), June.



B. Temperature Departure from 30 - Year Mean (°F 1941-70), June 1980

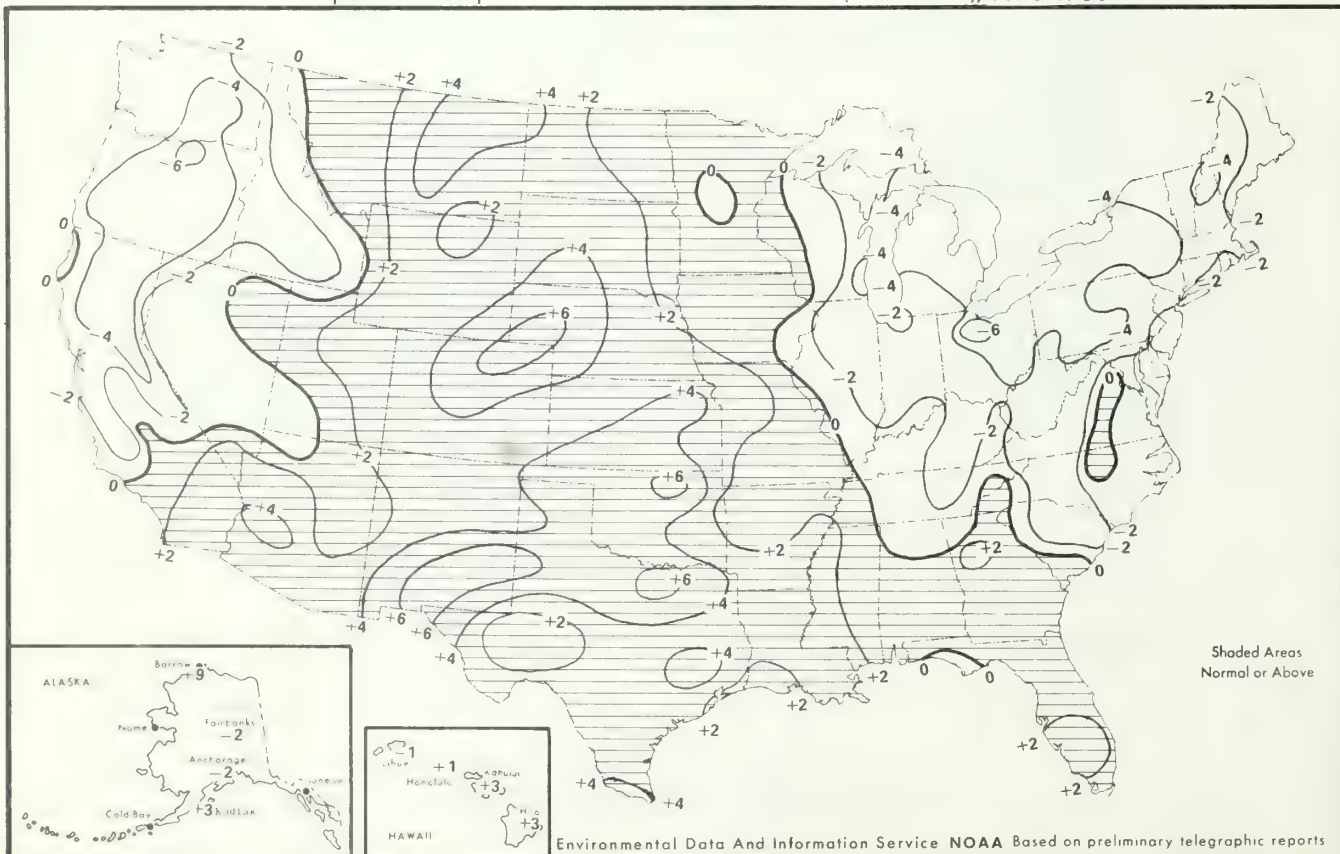




Chart II. A. Total Precipitation (Inches), June 1980



B. Percentage of Normal Precipitation, June 1980

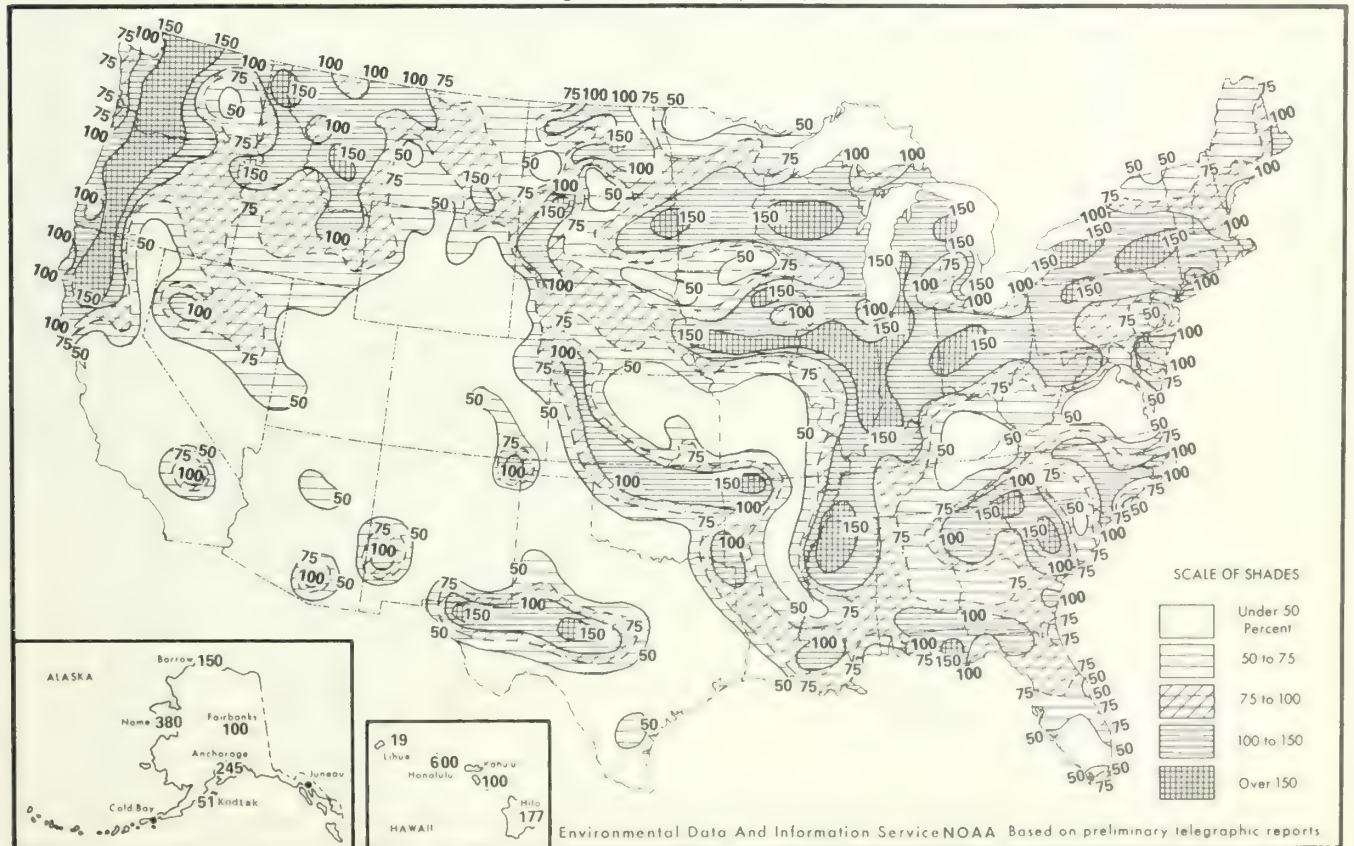
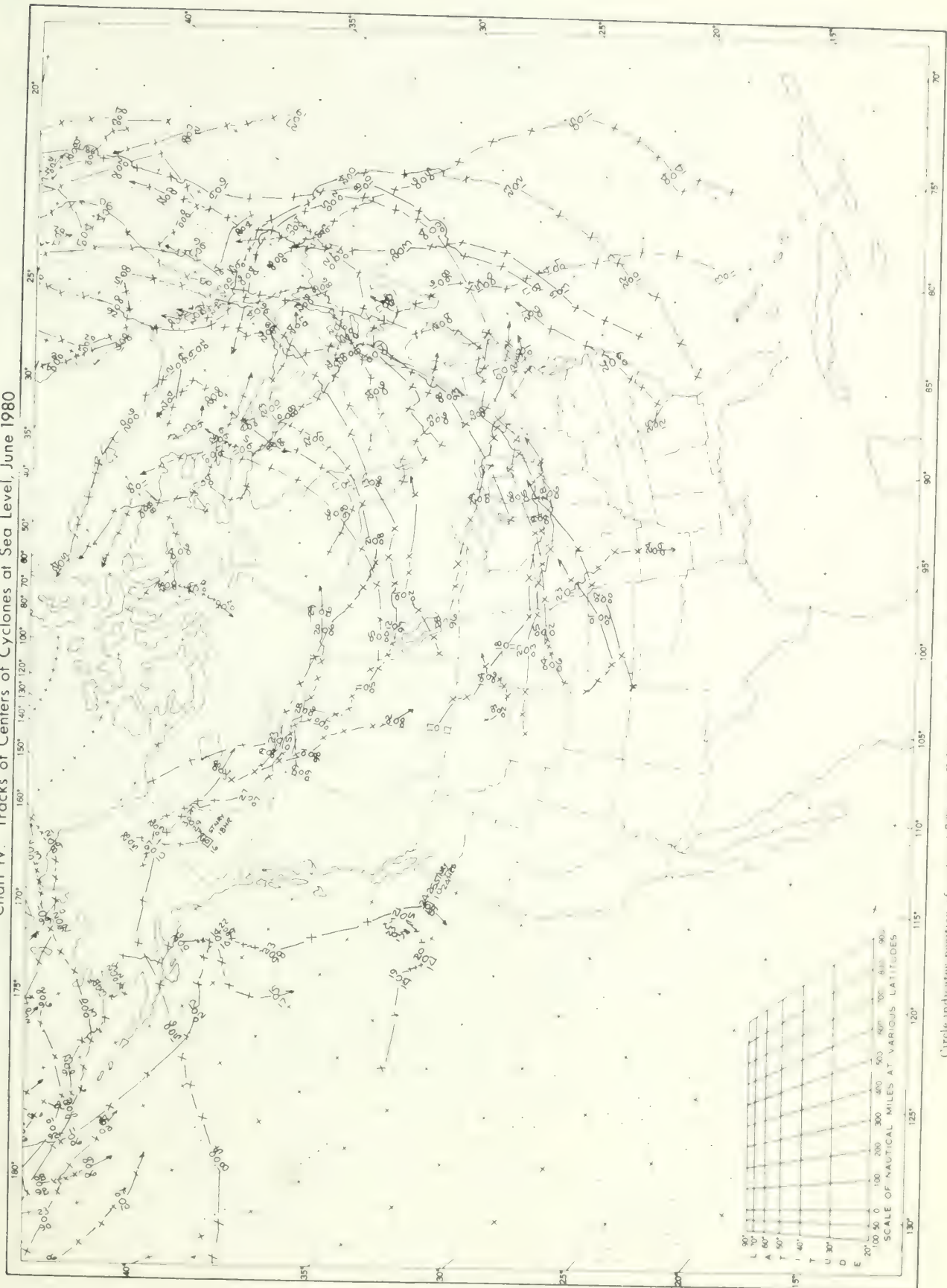






Chart IV. Tracks of Centers of Cyclones at Sea Level, June 1980









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JULY 1980

VOLUME 31

NUMBER 7

# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



"I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF  
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*Daniel B. Mitchell*

DIRECTOR  
NATIONAL CLIMATIC CENTER

**noaa**

NATIONAL OCEANIC AND  
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ENVIRONMENTAL DATA AND  
INFORMATION SERVICE

NATIONAL CLIMATIC CENTER  
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NOTE: Late reports and corrections will be carried in the June and December issues of this publication. An explanatory page "Description of Charts" will be carried in the January and July issues.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

JULY 1980

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist  
Environmental Data and Information Service, NOAA

**HIGHLIGHTS:** The heat wave, which began in June, bore down on the eastern two-thirds of the Nation for most of the month. During the last 10 days of July, the ridge of high pressure aloft responsible for the anomaly moved westward and allowed cooler air to come in to the northern Plains. Although precipitation was heavy in some areas, the high temperatures put a tremendous demand on moisture supplies. The central and southern Plains and parts of the South suffered losses in human lives as well as crops, poultry, and livestock.

**FIRST WEEK:** July began with a continuation of the severe heat wave affecting much of the United States. Only the Northwest, the Great Lakes area, and the Northeast were spared the heat. Temperatures ranged from 9 to 11° above normal in Oklahoma, Kansas, Missouri, and Arkansas, and well above normal temperatures extended throughout the Plains and the South. The heat and high humidities took a heavy toll from the poultry industry and hurt other livestock. Frontal systems moving through the northern tier of States became nearly stationary from New England through the Ohio Valley and into the central Plains. Very welcome rain, up to 2 inches, fell through northern Kansas and Missouri and through the lower Ohio Valley.

**SECOND WEEK:** The hot weather spread eastward and intensified in the central Plains. New England remained cool, but the Southwest and all other areas east of the Rockies were hot. Average temperatures in Kansas, Missouri, and Arkansas ranged from 12 to 15° above normal. The heat edged into the southern fringes of the Corn Belt and stressed corn as it began its sensitive propagation stage. Some heavy showers fell in parts of northeastern Iowa, but most of the State had little or no rain. Heavy showers fell in the upper Ohio Valley and the central Appalachians. The central Gulf Coast and the

Southeast recorded scattered light to moderate showers.

**THIRD WEEK:** Record-breaking heat continued in the eastern two-thirds of the Nation, but some cooling began from the northern Plains by the end of the week. The ride of high pressure associated with the hot weather showed signs of backing westward. The averages for the week were still 12 to 15° above normal in the central Plains. Temperatures over 100° or in the high 90's dominated much of the western Corn Belt on most days. Showers dotted the central and northern Rockies through the Great Lakes to New England and down the East Coast. A disturbance in the Gulf of Mexico spread heavy showers through the eastern Gulf Coast States.

**FOURTH WEEK:** The pattern of hot weather did change early in the week. Cooler air moved into the northern Plains and pushed eastward and southward. The wedge of hot weather moved westward and 100° temperatures extended as far north as the State of Washington. Texas and the Southwest saw little relief from the hot weather. A slow-moving frontal system moved to a position from New England to the Texas Panhandle and triggered some heavy rain. A disturbance from the Gulf of Mexico moved through the Southeast. The heaviest rain fell from the Mississippi Delta to southern Michigan and in the upper Ohio Valley. Thunderstorms produced heavy rain down the East Coast and in the South.

During the last 4 days of the month, hot weather again began pushing northward through the Plains, but by the last day, another surge of cool air began to move into the western portions of the Midwest. A lack of moisture in the air kept rain to small amounts, although some isolated heavy thunderstorms did occur.

# HURRICANE ALLEN

July 31 - August 11, 1980

National Hurricane Center, NOAA  
Miami, Florida

## GENERAL

Hurricane Allen was the second most severe Atlantic hurricane in modern records and will long be remembered and studied. Allen was an unusual hurricane in a number of ways, as follows.

A Cape Verde hurricane is rarely observed so early in August.

The forward motion of Allen along most of its track was unusually fast, close to 20 knots, except for a decrease in forward speed over the Gulf of Mexico, during the 2 days prior to landfall.

The rapid development of Allen east of the Lesser Antilles, while moving westward at more than 20 knots, was unusual although similar to Hurricane Flora in 1963.

The movement of Allen into the Caribbean, where strong westerly shear had prevailed, appeared likely to doom the hurricane. On the contrary, Allen used the strong shear to strengthen even further. The strong anticyclone in the upper atmosphere associated with Allen's outflow moved along with the same forward speed as Allen and converted the westerlies to southerlies. This helped accelerate the outflow and allowed the hurricane to reach record strength.

Allen reached the top of the Saffir-Simpson Scale (Category 5) 3 times. This event had not been observed before. It obtained the lowest pressure ever recorded in the eastern Caribbean, 911 mb, on 5 August while south of Puerto Rico. After weakening near Haiti and Jamaica, Allen again strengthened and a record minimum pressure of 899 mb was recorded by a NOAA reconnaissance aircraft on the 7th. This is not only the lowest pressure ever observed in the western Caribbean, but the lowest ever observed by a reconnaissance aircraft in an Atlantic hurricane, and the second lowest ever recorded in the Atlantic, Caribbean and Gulf of Mexico according to modern records. Allen began losing strength for a second time as the center passed near the north coast of the Yucatan peninsula on the 8th. Regaining strength again over the open waters of the Gulf of Mexico, Allen's central pressure dropped to 909 mb as recorded by an Air Force reconnaissance aircraft on the 9th. This is the lowest pressure ever measured in the western Gulf of Mexico.

The center of Allen did not cross land at any location until it moved inland north of Brownsville, TX. It did a remarkable job of 'broken field running' through the Caribbean at speeds of 15 to 20 knots. The eye passed between Barbados and St. Lucia, Haiti and Jamaica, and Cuba and Jamaica. It then passed north of the Cayman islands, and between Cuba and the Yucatan peninsula. Even after reaching the Texas coast, Allen hesitated long enough to weaken to 945

mb, and then moved inland north of Brownsville with the highest tides and winds over the least populated section of the Texas coast.

## METEOROLOGICAL HISTORY

A disturbance moved off the northwest African coast on 30 July. By 1 August the second tropical depression of the season had developed when satellite pictures indicated the consolidation of 2 circulation centers within the large cloud mass of the African disturbance.

Allen rapidly reached tropical storm strength in the early morning hours of the 2d and hurricane strength that evening. By the time the first reconnaissance aircraft was able to penetrate the center during the afternoon of the 3d, Allen had winds of 110 knots and a minimum pressure of 967 mb. The pressure had dropped to 951 mb by that evening as the eye passed just north of Barbados and south of St. Lucia.

The hurricane continued westward into the Caribbean at 15 to 20 knots, reaching its first milestone when the minimum pressure fell to 911 mb south of Puerto Rico during the evening of the 4th.

As the large circulation of Allen began to spread over Hispaniola on the 5th, a turn toward the west northwest brought the center just south of Haiti's southwestern peninsula that evening. This same northward jog has been observed in a number of hurricanes, and may be due to pressure falls over Hispaniola as large heat releases occur in mountain cloudbursts. The hurricane weakened as its circulation interacted with mountainous terrain of Haiti and Jamaica.

Thereafter, Allen resumed a more westerly course passing just north of Jamaica and the Cayman Islands on the 6th. Central pressure began to fall rapidly again as the circulation moved over the warm waters of the northwestern Caribbean Sea. Allen's second milestone occurred on the afternoon of the 7th when a record breaking minimum pressure of 899 mb was observed in the Yucatan Channel.

When the southern portion of Allen's circulation moved over the Yucatan peninsula during the night of the 7th, the moist southerly inflow to the hurricane's center was cut off. The minimum pressure rose very rapidly again, reaching 961 mb on the morning of the 8th.

While the hurricane continued west northwest across the warm waters of the Gulf of Mexico, rapidly falling pressures resulted in the third milestone as a minimum pressure of 909 mb was observed the night of the 8th.

Allen's course through the Atlantic and Caribbean was



# HURRICANE ALLEN

controlled by a large, warm high pressure system covering the western Atlantic and southern United States. This system was nearly stationary and may have been partially reinforced by the warm outflow from Allen. As the hurricane moved into the Gulf of Mexico, general pressure falls began over the southern United States, indicating that Allen should begin slowing its rapid forward speed and possibly turn more toward the north.

The expected decrease in forward speed did not occur until Allen approached the Texas coast on the 9th. Even though the ridge over the southern states weakened markedly, its main effect was to slow Allen's forward speed. The western portion of the ridge did not retreat far enough to allow the hurricane to turn northward. This spared the heavily populated sections of the middle and upper Texas coast from storm surge up to 15 feet.

After moving inland on the 10th, Allen continued slowly west northwest with winds diminishing rapidly as the circulation encountered the mountains of northern Mexico. By this time the major threat was flash floods in the mountains.

## METEOROLOGICAL STATISTICS, DEATHS, AND DAMAGE

Northern Windward and southern Leeward Islands strongest winds were on the north coast of Barbados and the south coast of St. Lucia. Heavy rains caused flash flooding on St. Lucia. Preliminary damage estimates in Barbados total \$1.5 million. About 500 houses were damaged or destroyed. There were no reports of deaths. Eighteen people were killed on St. Lucia which sustained heavy damage. The only other death reported in the Islands was on Guadeloupe.

### HAITI AND JAMAICA

Allen passed a short distance south of the extreme southwest coast of Haiti, producing extensive damage from winds and flash floods. 220 people were reported killed and 835,000 left homeless. Damage was estimated to be more than \$400 million. About 1/2 of the nation's coffee crop was destroyed.

There was extensive damage along the immediate northeast coast of Jamaica, but only minor damage elsewhere. 8 people were reported killed. Damage figures for the Island have not been received.

### CUBA AND THE CAYMAN ISLANDS

There were no reports of significant damage from Cuba, although 3 people died. Allen passed north of Cayman Islands but Cayman Brac was raked by winds in excess of 100 knots and sustained considerable property damage, but no casualties.

### MEXICO (YUCATAN AND NORTHEAST GULF COAST)

No reports of significant damage have been received from Mexico. The extreme northeast coast of the Yucatan peninsula was very near the center of Allen but remained on the weak side. The northeast Mexican Gulf coast was also on the weak side. Both of these areas are sparsely populated.

## UNITED STATES

Allen did only a fraction of the damage that had been feared, because it weakened just prior to reaching the coast, and its path sent the highest storm surge and strongest winds over the sparsely populated coastal section between Brownsville and Corpus Christi, TX. There were only 2 deaths directly attributed to Allen, and these were drownings in the Corpus Christi area. The reported indirect deaths were: 13 in an oil company evacuation helicopter which crashed while taking workmen from the Louisiana offshore oil rigs. 4 in an offshore oil rig collapse off the Louisiana coast, 3 fishermen swept off the jetties by large swells in the Galveston area, and 2 victims of heart attacks. There were also several deaths in automobile accidents during the period of evacuation. Estimated total damage caused by high tides, strong winds, flooding and tornadoes was \$600 million in Texas.

The major damage in Louisiana was the destruction of 2 \$30 million oil drilling platforms and damage to other platforms off the Louisiana coast. It has been calculated that nearly a half million people evacuated the coastal sections of Texas and Louisiana.

While Allen was passing south of Cuba winds of gale force swept the lower Florida Keys. However, there was no significant damage.

Tides reached levels of 3 to 5 feet above normal along the upper Texas and western Louisiana coasts, with higher levels in the area of maximum storm surge from Corpus Christi southward. There is no way of estimating the maximum storm surge, since it occurred over the unpopulated section of Padre Island between Brownsville and Corpus Christi. A survey by aircraft the day after Allen moved inland showed numerous cuts and washouts over a 50 mile stretch of Padre Island north of where the center moved inland. It is believed so much water crossed the island that water levels in the Laguna Madre were much higher than might be expected.

The strongest measured winds were 120 knot gusts at Port Mansfield on the west side of Laguna Madre about 40 miles north of Brownsville. The peak gust was only 68 knots at Brownsville Airport. An oil rig 50 miles east of Brownsville recorded 120 knot sustained winds. Elsewhere, gusts to 80 knots occurred at Corpus Christi Airport and 95 knots at nearby Aransas Pass.

Rainfall of 10 to 15 inches fell over southern Texas along the track of Allen for up to 150 miles north and 50 miles south of the center (See attached map). More than 16 inches was measured at Falfurrias, and over 15 inches at Raymondville and Alice. As the remnants of Allen moved through northern Mexico, orographic lifting produced 5 to 10 inch rains north of Del Rio. Dryden, TX recorded over 10 inches. The satellite interpretation method for rainfall estimates, developed by Woodley and Griffith, was quite successful with Allen. Twenty four hours prior to landfall this system indicated a maximum rainfall of 16 inches.

# HURRICANE ALLEN

There were at least a dozen tornadoes reported around southern and central Texas. 2 were confirmed in Brownsville, which damaged 30 houses. More than 8 tornadoes were observed over inland areas west and north of Corpus Christi. The only significant damage was in Bishop where several businesses sustained heavy

damage and part of the high school roof was blown off. Tornadoes in central Texas injured about 20 people at a campground near San Marcus and caused an estimated \$50 million damage at the Austin Airport, primarily to hangars and corporate jets.

## PRELIMINARY BEST TRACK

DATE	TIME (GMT)	POSITION		PRESSURE (MB)	WIND (KT)	STAGE
		LATITUDE	LONGITUDE			
7/31	0000					
	0600					
	1200	11.0	30.0		25	Disturbance
8/01	1800	10.9	32.2			
	0000	10.8	34.3	1010	30	Depression
	0600	10.7	36.4	1009	30	
	1200	10.7	38.6	1008	30	
8/02	1800	10.7	40.7	1006	30	
	0000	11.0	42.8	1005	35	Tropical storm
	0600	11.4	44.8	1000	45	
	1200	11.9	46.9	995	55	
8/03	1800	12.3	49.1	990	60	
	0000	12.4	51.4	985	65	Hurricane
	0600	12.6	53.6	980	70	
	1200	12.8	55.6	975	80	
8/04	1800	12.9	57.5	965	95	
	0000	13.3	59.1	950	110	
	0600	13.6	61.0	948	115	
	1200	14.0	63.0	945	125	
8/05	1800	14.4	64.9	930	130	
	0000	14.8	66.7	911	140	
	0600	15.4	68.6	916	145	
	1200	15.9	70.5	932	155	
8/06	1800	16.5	72.3	940	150	
	0000	17.8	73.8	945	140	
	0600	18.3	75.9	955	115	
	1200	19.2	78.0	955	115	
8/07	1800	20.0	80.1	955	125	
	0000	20.1	81.9	945	135	
	0600	20.4	83.6	935	145	
	1200	21.0	84.8	910	155	
8/08	1800	21.8	86.4	899	165	
	0000	22.2	87.9	920	155	
	0600	22.8	89.2	945	130	
	1200	23.4	90.5	960	115	
8/09	1800	23.9	91.8	940	130	
	0000	24.5	93.0	912	145	
	0600	25.0	94.2	909	155	
	1200	25.2	95.4	916	140	
8/10	1800	25.4	96.1	925	125	
	0000	25.8	96.8	935	110	
	0600	26.1	97.2	945	100	Landfall
	1200	26.7	98.1	960	85	
8/11	1800	27.3	99.0	970	70	
	0000	27.7	99.8	990	60	Tropical Storm
	0600	28.0	100.9	1000	45	
	1200	28.5	101.9	1005	30	Depression
	1800	28.9	102.9	1008	30	

## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

STATE	Temperature					Precipitation				
	Monthly extremes					Monthly extremes				
	Station	Highest °F	Date	Station	Lowest °F	Date	Station	Greatest In.	Station	Least In.
Alabama	3 Stations	108	17	Edgewire Lakes	52	1	Coden	9.10		.46
Alaska	2 Stations	88	17	2 Stations	30+	30+	Port Alexander	13.29		.46
Arizona	2 Stations	123	17	2 Stations	69	69	Hawley Lake	6.45	6 Stations	.00
Arkansas	2 Stations	113	16	Gilbert	24+	24+	Madison 1 NW	10.65	2 Stations	.00
California	2 Stations	111	31+		23	6	Mountain Pass	3.33	148 Stations	.00
Colorado	2 Stations	109	17	2 Stations	24	5+	Akron FAA AP	5.77	Salida 3 W	.00
Connecticut	Norwalk Gas Plant	105	17	Coventry	47	1	West Thompson Lake	9.42	Falla Village	1.79
Delaware	2 Stations	102	17	2 Stations	48	1	Bridgeville 1 NW	4.85	Georgetown 5 SW	1.33
Florida	Niceville	107	15	5 Stations	63	1	Cross City 2 WNW	20.55	Jacksonville Beach	.00
Georgia	Newnanville 2 SE	110	13	Blairsville Exp Sta	49	1	Lincolnton	6.94		.14
Idaho	2 Stations	105	17	Mauna Loa Slope Obs	36	17	N Wallus Ditch 1051	23.99	4 Stations	.00
Illinois	2 Stations	108	31+	Angola	47	1	Elk City R S	2.97	Shoshone 1 WNW	.00
Indiana	2 Stations	105	16+	Cresco 1 NE	45	27	Gladstone Dam 18	6.66	Fairbury Waterworks	.45
Iowa	2 Stations	105	16+		45	27	Shoshone 1 WNW	8.02	Rensselaer	.97
Kansas	Council Grove Dam	114	11	Goodland WSO AP	51	27	Denison	6.08		.36
Kentucky	2 Stations	108	17	Paducah FAA AP	62	29+		7.25	2 Stations	.00
Maine	Saco	103	20	Boothville WSMO CI	37	10	Paducah FAA AP	10.02		1.17
Maryland	2 Stations	103	16	Warrenton 1 N	43	7	Hanna 3 S	9.32		.15
Massachusetts	Chester 2	104	17	Solomons	37	7	Portland WSMO AP	6.99	Assateague State Park	1.30
Michigan	Monroe	104	17	Chester 2	37	7	Assateague State Park	7.22		1.30
Minnesota	2 Stations	105	17	East Wareham	37	7	East Wareham	10.57		1.20
Mississippi	Cole Camp 9 SE	113	31	Kenton	27	26	Pellston FAA AP	8.80		.85
Missouri	2 Stations	109	17	Aitkin	27	26	Hanna 3 S	5.25		.26
Montana	2 Stations	109	17	University	47	29	Greenville	13.80		.61
Nevada	2 Stations	109	17	Berryman 6 NW	47	26	Monett WSMO	7.99		.10
New Hampshire	2 Stations	109	17		30	17	Silver Lake	2.62		.00
New Jersey	Toms River	103	16	Agate 3 E	41	29	Brewster	4.98		.14
New Mexico	2 Stations	108	17	Spring Valley St Pk	28	17	Minden	3.04		.02
New York	2 Stations	105	17	Mount Washington	29	17	Hanover	7.18		1.79
North Carolina	Concord	105	17	Newton St Pauls Abbey	43	17	Wertsville	7.14		1.54
North Dakota	Williston WSO AP	103	16	Tierra Amarilla 4 WNW	31	6	Cloudcroft Cable TV	4.20	4 Stations	.00
Ohio	2 Stations	103	16	Old Forge	41	1	Canisteo	8.39		.62
Oklahoma	2 Stations	117	17	Transou	41	1	Coveata Exp Station	3.11		1.10
Pennsylvania	2 Stations	103	16	5 Stations	40	26+	Reeder 13 N	4.73		.24
Rhode Island	2 Stations	103	16	Dorset	42	17+	Versailles	11.17		2.03
South Carolina	Saluda	109	14	Zoe 1 E	53	24	Smithville 1 W	3.17	34 Stations	.00
South Dakota	Porcupine 16 NW	102	29	3 Stations	31	17+	Enterprise 20 NNE	1.94	11 Stations	.00
Tennessee	2 Stations	108	17	Clermont 4 NW	34	7	Johnstown	11.89	Holtwood	.54
Texas	Wichita Falls WSO AP	114	3+	2 Stations	45	7+	San Lorenzo 3 S	13.52	Gaonillas Utuado	.00
Vermont	3 Stations	108	29+	Kingston	45	7	North Foster 1 E	7.24		1.32
Virginia	2 Stations	104	21+	Mount Mansfield	36	17	Charleston WSO AP	6.97	Edgefield 1 ENE	.02
Washington	3 Stations	105	17	Burkes Garden	43	1	Custer	3.99		.10
West Virginia	Wayne	101	9	7 Stations	70	18+	Lawrenceburg Filt Pl	8.06	Pikeville	.61
Wisconsin	La Crosse FAA AP	104	7	Canaan Valley	35	7	Port Arthur City	9.01	62 Stations	.00
Wyoming	Redbird	108	28	Scofield	33	6	Sunnyside	2.49	3 Stations	.02
				Mount Mansfield	36	17	Union Village Dam	8.42		2.09
				Burkes Garden	43	1	2 Stations	9.77		1.85
				7 Stations	70	18+	East End	5.09		1.73
				3 Stations	39	19+	Clearwater	4.80	6 Stations	.00
				Canaan Valley	35	7	Franklin 2 NE	12.73		3.22
				Nevald 4 N	35	7	Alma Dam 4	6.97		.68
				Darwin Ranch	26	18	Diversion Dam	3.39		.00



# CLIMATOLOGICAL DATA

## METRIC UNITS

JULY 1980

[illegible]

## JULY 1981

- 9 -



## JULY 1980

- 10 -



## METRIC UNITS

JULY 1987

[illegible]

# CLIMATOLOGICAL DATA

## METRIC UNITS

JULY 1980

State and Station	Elevation (ground)	Pressure			Temperature				Precipitation				Wind			No. of days (sunrise to sunset)	Sky (cover, tenths)																
		Station	Sea level	mb	C	F	Average	Departure from normal	Highest	Lowest	Date	No. of days	Max 32.2 °C or above	Min. 0 °C or lower	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	No. of days	With thunderstorms	Maximum depth on ground	Resultant speed	Resultant direction	Speed (1.6 kilometers)	Direction	Date						
NEW YORK	125	SPRACUSE	1013.7	28.6	16.4	22.5	22.5	0.6	33.9	21	11.1	13+	5	0	17.2	72	65	-13	22	13	6	0	0	1.4	25	13.9	N 21	5	15	11	6-2	58	
	652	ASHVILLE	1017.2	31.2	19.4	25.3	25.3	2.2	35.0	17	13.9	1	13	0	20.6	78	56	-68	33	7	5	0	0	0.4	33	11.2	36 10+	14	4	9	4-8	71	
	232	CAPE HATTERAS	1016.3	30.2	22.3	27.3	27.3	0.7	32.2	31	13.9	8	1	0	22.2	80	80	-62	36	8	4	0	0	1.6	21	9.4	11 28+	19	11	11	5-4	66	
	224	CHARLOTTE	1015.8	32.3	21.0	26.7	26.7	0.6	37.2	17+	16.7	1	16	0	20.6	70	67	-63	33	6	8	0	0	0.5	24	10.3	27 10	12	10	9	4-8	83	
	273	GREENSBORO	1016.4	31.5	20.0	25.8	25.8	0.7	36.7	16	13.9	1	14	0	20.0	74	68	-63	33	15	11	12	0	0	0.4	26	10.3	27 10	14	10	7	4-5	80
	132	RALPH	1016.1	31.8	20.3	26.1	26.1	0.8	35.0	31+	16.7	1	14	0	21.7	80	54	-75	19	11	10	0	0	1.6	21	15.6	36 17+	16	6	9	4-7	60	
	9	WILMINGTON	1016.2	33.8	22.7	28.3	28.3	1.4	37.2	12+	18.9	15	25	0	21.7	70	151	-61	54	11	11	0	0	0.9	20	10.3	33 10	8	10	13	6-1	59	
	502	BISMARCK	1013.3	30.2	14.1	22.2	22.2	0.6	38.3	10	10.6	8+	9	0	11.1	53	80	24	36	8	11	0	0	0.2	32	20.6	28 3	11	15	5	4-7	70	
	273	FARGO	1012.0	29.4	14.8	22.2	22.2	0.7	38.6	10	7.8	26	6	0	12.8	58	19	-61	9	10	0	0	0	0.4	21	11.6	N 27+	11	15	5	4-7	78	
	579	WILLISTON	1012.3	32.4	13.3	22.9	22.9	1.7	42.8	10	5.6	21	17	0	10.6	49	14	-38	7	7	8	0	0	0.4	27	16.5	34 29	16	11	4	4-0	79	
OHIO	368	AKRON	1015.4	28.2	16.9	22.6	22.6	0.5	37.8	20	11.1	7+	5	0	16.1	71	138	41	33	13	12	0	0	1.1	22	6.4	26 27	6	15	10	6-2	72	
	232	CINCINNATI	1015.1	32.1	21.3	26.7	26.7	2.1	37.2	16+	15.6	1	15	0	16.7	71	176	75	54	9	9	0	0	1.3	23	13.0	NW 7	4	15	12	6-5	63	
	109	CLEVELAND	1015.3	28.5	16.3	22.4	22.4	0.5	36.1	15	8.9	7	6	0	16.7	71	121	34	33	12	12	0	0	1.3	23	13.0	32 16	4	15	12	6-5	63	
	303	COLUMBUS	1015.1	29.7	19.1	24.4	24.4	1.3	36.1	20+	12.8	7+	8	0	18.3	69	116	-14	26	10	0	0	0	1.4	22	22.4	NW 9	9	13	9	5-9	55	
	395	DAYTON	1014.8	31.0	18.8	24.9	24.9	1.2	38.3	15	13.3	29	13	0	18.3	69	176	-14	26	10	0	0	0	1.4	22	22.4	NW 9	9	13	9	5-9	55	
	204	MANSFIELD	1014.2	27.7	17.5	22.6	22.6	-0.4	31.9	15	10.6	6	5	0	18.9	78	127	34	58	10	12	0	0	0.9	24	16.5	SW 16	5	11	11	5-9	62	
	204	TOLEDO	1014.2	29.0	17.2	23.1	23.1	0.7	36.1	20+	10.0	7	7	0	18.9	78	114	32	36	13	9	0	0	0.9	24	16.5	SW 16	5	11	11	5-9	62	
	359	YOUNGSTOWN	1015.5	27.2	14.3	20.8	20.8	-0.7	33.3	20+	7.2	7	3	0	15.6	72	157	58	52	8	11	0	0	1.0	22	12.5	32 16	5	17	9	6-0	62	
	392	OKLAHOMA CITY	1013.3	39.1	23.4	31.3	31.3	3.8	42.2	29	18.3	23	31	0	15.6	41	11	-57	11	1	1	0	0	3.1	16	18.8	NE 27	25	6	0	1-6	98	
	198	TULSA	1013.4	39.7	26.6	33.2	33.2	5.3	42.8	30+	17.2	23	31	0	15.4	47	2	-87	2	1	1	0	0	3.2	19	10.3	12 21	27	3	1	1-5	94	
	2	ASTORIA	1019.9	19.6	12.3	15.9	15.9	0.4	33.3	21	6.7	6	1	0	12.2	81	16	-8	14	4	0	0	0	2.9	28	11.2	29 26	5	10	16	6-6	64	
OREGON	1262	BURNS	1017.7	29.2	18.3	18.8	18.8	-1.4	37.8	22	5.9	13	10	0	11.1	64	10	-2	5	2	0	0	0	2.1	35	8.9	2 27	17	7	3	3-5	64	
	109	LOGAN	1015.3	33.1	12.6	22.8	22.8	-0.1	35.6	21	5.6	6	4	0	11.1	64	10	-2	5	2	0	0	0	2.1	35	8.9	2 27	17	7	3	3-5	64	
	326	PORTLAND	1017.9	30.6	18.0	22.8	22.8	-0.8	40.0	21	8.9	13+	19	0	9.4	48	1	-6	1	1	1	0	1.9	31	9.4	34 16	24	6	2	1-8	60		
	452	PORTLAND	1017.9	30.6	18.0	22.8	22.8	-0.8	40.0	21	8.9	13+	19	0	9.4	48	1	-6	1	1	1	0	1.9	31	9.4	34 16	24	6	2	1-8	60		
	60	SALEM	1017.8	29.7	14.3	20.3	20.3	-0.6	36.3	21	11.7	30+	2	0	12.8	65	6	-7	5	2	0	0	2.9	27	11.2	NW 27	13	8	10	5-0	74		
	1169	SEXTON SUMMIT	1014.7	23.9	11.2	17.6	17.6	0.1	31.7	21	6.1	3	0	0	11.1	64	0	-8	0	0	0	0	0	1.5	34	8.0	36 27	15	10	8	3-7	64	
	110	GUAM TAGUAC	1013.6	30.2	22.8	26.4	26.4	0.1	31.7	21	6.1	3	0	0	11.1	64	0	-8	0	0	0	0	0	1.5	34	8.0	36 27	15	10	8	3-7	64	
	29	KOPOR R	1009.1	30.6	23.9	27.3	27.3	0.0	32.8	10	23.1	16	2	0	24.4	81	278	34	71	25	0	0	0	5.8	9	11.6	SE 6	0	2	29	9-2	32	
	3	KUJALEIN	1009.5	30.8	25.1	27.9	27.9	0.1	31.7	31+	23.1	16	2	0	24.4	81	40	12	10	12	0	0	0	5.8	9	11.6	SE 6	0	2	29	9-2	32	
	3	MAJURO	1009.5	30.3	24.7	27.5	27.5	0.3	32.2	20	23.3	30+	1	0	22.8	82	315	-66	104	25	4	0	0	1.4	27	11.2	NW 2	0	6	25	8-6	48	
	37	PAGO PAGO	1012.3	28.6	23.8	26.2	26.2	0.5	30.6	12	20.6	7	0	0	22.8	82	215	-131	42	23	0	0	0	2.6	8	9.8	E 23	0	7	24	8-9	69	
PACIFIC AREA	37	PONAPE R	1012.3	28.6	23.8	26.2	26.2	0.5	30.6	12	20.6	7	0	0	22.8	82	105	-131	42	23	0	0	0	2.6	8	9.8	E 23	0	7	24	8-9	69	
	37	TRUK MOEN ISLAND	1013.5	31.6	23.2	27.4	27.4	0.7	33.3	27+	22.2	31+	17	0	0	22.8	82	403	-50	82	30	1	0	0	0	11	12.1	NE 24	1	6	24	8-6	35
	3	WAKE	1013.5	30.6	23.7	27.1	27.1	0.1	31.7	30+	22.2	19	0	0	22.8	82	438	47	77	26	0	0	0	0	25	11.6	N 19+	0	5	26	9-1	49	
	13	YAP R	1007.5	30.4	23.5	27.0	27.0	-0.3	33.9	24+	20.6	30	29	0	0	23.3	74	69	-44	49	14	0	0	0	4.2	9	10.3	7 30	16	13	2	4-0	87
	118	ALBANY	1015.0	31.3	18.9	25.2	25.2	0.1	38.3	21+	11.7	7	13	0	15.0	57	38	-73	18	9	5	0	0	1.5	26	20.6	25 5	13	9	5	5-2	61	
	223	ERIE	1015.1	25.9	15.8	20.9	20.9	0.5	32.8	20	8.9	13	0	0	16.1	75	138	48	50	12	13	0	0	1.6	22	10.3	22 8	9	14	8	5-6	81	
	103	HARRISBURG	1015.3	30.9	18.2	24.6	24.6	0.1	37.8	20	11.1	7	10	0	19.4	75	40	-54	10	8	6	0	0	1.2	24	21.9	7 25	9	17	5	4-8	65	
	247	PHILADELPHIA	1014.6	31.2	20.4	25.8	25.8	0.9	37.2	21	14.4	13	12	0	17.8	66	167	63	90	10	8	0	0	1.4	24	21.9	5W 22	12	12	7	4-7	65	
	383	PITTSBURGH	1014.9	29.6	18.2	23.9	23.9	1.7	36.7	20+	11.7	7	6	0	17.2	70	172	74	58	12	9	0	0	1.1	23	13.4	13 27+	8	12	11	5-8	42	
	287	SCRANTON	1014.7	28.6	17.1	22.9	22.9	0.6	35.0	21+	9.4	7	3	0	15.0	64	96	-8	32	10	8	0	0	1.1	23	16.1	5W 21	7	12	12	6-1	66	
	160	WILLIAMSPORT	1014.5	29.8	16.6	23.2	23.2	0.5	36.1	21	8.9	7	6	0	17.2	72	46	-60	18	11	7	0	0	1.3	28	10.3	16 28+	8	9	14	6-1	66	
RHODE ISLAND	34	BLOCK ISLAND	1014.5	29.8	16.6	23.2	23.2	0.5	36.1	21	8.9	7	6	0	17.2	72	46	-															



## CLIMATOLOGICAL DATA

METRIC UNITS

JULY 1981

State and Station	Elevation (ground)	Pressure			Temperature						Precipitation						Wind				No. of days (sunrise to sunset)		Possible sunshine (sunrise to sunset)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
		Station Q	mb	mb	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	No. of days		Average relative humidity	Total	mm	Departure from normal	Greatest in 24 hours	25 mm. or more				With thunderstorms	Maximum depth on ground	Snow, ice pellets	Resultant speed	Resultant direction	Speed	Fastest mile (1.6 kilometers)	Direction	Date																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
													Max 32.2 °C or above	Min. 0 °C or lower							Total	mm											mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm</



# CLIMATOLOGICAL DATA

## METRIC UNITS

JULY 1985

State and Station	Pressure		Temperature										Precipitation						Wind			No. of days (sunrise to sunset)		Sky cover, tenths (sunrise to sunset)	%																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	Elevation (ground)	Station Q	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	No. of days		Average dew point	Average relative humidity	Total	mm	Departure from normal	Greatest in 24 hours	25 mm. or more	With thunderstorms	Total	mm	Maximum depth on ground			Snow, ice pellets	Resultant speed	Resultant direction	Speed	Direction	Date	Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
											°C	°C																							°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C

(Base 65°F.)

JULY 1985

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## (Base 65°F.)

State and station	Current season			State and station	Current season			State and station	Current season			State and station	Current season		
	This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month
ALABAMA				HAWAII				NEBRASKA				SOUTH CAROLINA			
BIRMINGHAM U	632	1235	1284	HILO	405	2147	1640	GRAND ISLAND	493	830	621	CHARLESTON	549	1262	1201
BIRMINGHAM	607	1204	1131	HONOLULU	501	2460	2226	LINCOLN	542	921	699	CHARLESTON U	574	1419	1341
HUNTSVILLE	542	1054	1054	KAHULUI	512	2599	1976	NORFOLK	440	760	563	COLUMBIA	530	1064	1235
MOBILE	168	1587	1504	LIHUE	417	2034	1948	NORTH PLATTE	411	691	486	GRNNVILLE-SPRTNBGR	519	973	932
MONTGOMERY	582	1309	1297					OMAHA (EPPELY)	459	789	574				
				IDAHO				OMAHA (NORTH)	451	800	574	SOUTH DAKOTA			
ALASKA				BOISE	251	347	403	SCOTT'S BLUFF	417	674	407	ABERDEEN	251	420	341
ANCHORAGE	0	0	0	LEWISTON	271	333	366	VALENTINE	404	651	443	HURON	269	482	438
ANNETTE	0	3	14	POCATELLO	125	145	254					RAPID CITY	315	469	374
BARROW	0	0	0					NEVADA				SIOUX FALLS	290	512	442
BARTER ISLAND	0	0	0	ILLINOIS				ELKO	211	247	194				
BETHEL	6	6	0	CAIRO U	652	1248	1090	ELY	116	128	114	TENNESSEE			
BETHTLES	17	25	17	CHICAGO O HARE	338	492	394	LAS VEGAS	842	1645	1654	ABILENE	562	1032	847
BIG DELTA	11	16	28	MOLINE	395	629	555	PENO	218	252	196	AMARILLO	562	953	965
COLD BAY	0	0	0	PEORIA	425	661	595	WINNEMUCCA	262	318	253	AUSTIN	718	1822	1650
FAIRBANKS	8	3	46	ROCKFORD	329	504	437					BROWNVILLE	707	2477	2233
GULKANA	1	3	9	SPRINGFIELD	515	841	681	NEW HAMPSHIRE				CORPUS CHRISTI	649	2049	1973
HOMER	0	0	0					CONCORD	193	262	219	DALLAS FT WORTH	844	1895	1437
JUNEAU	0	0	0	INDIANA				MT WASHINGTON OBS	0	0	0	DEL RIO	785	2191	2005
KING SALMON	3	3	0	EVANSVILLE	535	906	835					EL PASO	693	1571	1280
KODIAK	0	0	0	FORT WAYNE	326	480	457	NEW JERSEY	238	373	506	GALVESTON	604	1569	1647
KOTZEBUE	0	0	0	INDIANAPOLIS	425	664	600	ATLANTIC CITY	250	398	436	HOUSTON INTERCON	705	1873	1637
MC GRATH	9	9	14	SOUTH BEND	367	586	415	ATLANTIC CITY U	435	719	597	LUBBOCK	605	1358	1306
NOME	0	0	0					NEWARK	416	671	577	MIDLAND	600	1297	1307
ST. PAUL ISLAND	0	0	0	IOWA				TRENTON U				PORT ARTHUR	633	1689	1585
TALKEETNA	5	5	6	DES MOINES	469	774	567					SAN ANGELO	685	1531	1589
UNALAKLEET	0	0	0	DUBOUQUE	347	570	373	NEW MEXICO				SAN ANTONIO	725	1907	1725
VALDEZ	0	0	0	STOUX CITY	430	696	584	ALBUQUERQUE	557	959	789	VICTORIA	684	1875	1777
YAKUTAT	0	0	0	WATERLOO	337	562	424	CLAYTON	433	698	452	WACO	758	1727	1610
				KANSAS				POSWELL	636	1360	954	WICHITA FALLS	843	1702	1486
ARIZONA				CONCORDIA	634	1044	749	NEW YORK				UTAH			
FLAGSTAFF	133	176	85												



# STORM SUMMARY

JULY 1980

STATE	TORNADOES					HAILSTORMS				WINDSTORMS				LIGHTNING				@HEAVY SNOWSTORMS AND BLIZZARDS				# ICE STORMS				o ALL OTHER			
	NUMBER	DAYS	DEATHS	INJURIES	† DAMAGE	DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE	
								PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS				
Alabama								3	3			2	4	2	1	5									121	2			
Alaska																													
Arizona												2	2																
Arkansas	1	1			4									1															
California	1	1			2			2	2					1															
Colorado	2	2						5	7			2	4	1															
Connecticut																													
Delaware										1		3	2																
Florida	6	5		1	5				6			2	2	5		4	2												
Georgia	1	1			3			2	2			12	5	5	1											91	2		8
Hawaii	*																												
Idaho	1	1			4			4							1														
Illinois	2	2			6				4	3	18	2	6																
Indiana	3	3	2	26	7			2	2		13		2												1				
Iowa	7	3			6			5	6		11	7	6			5													
Kansas	2	2			4			2	2		4	6																	
Kentucky	6	3		1	6			6	5	1	18	2	6	2	3	4									1				
Louisiana												6	2	2	2	5									24				
Maine								4	5			2	4	1		6													
Maryland & DC										1	3	5	4		1	5													
Massachusetts											2																		
Michigan	4	3			2			5	C	2	36	2	8	C	1	4	5									1			
Minnesota	2	2			6			5	5	1	8		7	6	1	1	5												
Mississippi																													
Missouri											12		2																
Montana	1	1			5			5	5		1	5			5														
Nebraska	1	1			2			6	7	1		6	6	1		3	4								5				
Nevada																													
New Hampshire								4	5			2	6	C		1	5												
New Jersey												6	2																
New Mexico																													
New York	2	2			5			4	4			5	2		3	5									1				
North Carolina	2	2			3							5	5	2															
North Dakota	4	3			4			5	6			5			4	4													
Ohio	7	3			6			5	6	2	50	6	5	4	5	6	4												
Oklahoma												4																	
Oregon												2														37			
Pacific																													
Pennsylvania	2	2		1	8			4	4	1	31	8			4	5													
Puerto Rico	*																												
Rhode Island	*																												
South Carolina	1	1		4						3	6	6	4	1	3														
South Dakota	4	4			4			2	7			5	2																
Tennessee	4	3			5						1	5	2	2	1	5										154			
Texas	2	2			1	6		4	2		1	6	2		2	5									9	200	6	8	
Utah	*																												
Vermont	*																												
Virginia	1	1			4			3	6	2	4	6	3	1	3	5													
Virgin Islands	*																												
Washington																										2			
West Virginia	4	1			4			2	2	2	5	6	3	2	4	5													
Wisconsin	17	5	3	27	6			6	7		12	8	7		1	6													
Wyoming	6	5			2			2	2			2																	

## Average monthly values

JULY 1980

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## Average monthly values

JULY 1980

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## Average monthly values

JULY 1980

K INTERMEDIATE FLIGHT MS										JACKSON, MS										JOHN F. KENNEDY INT. AP NY										JOHNSON IS., PACIFIC AREA										KEY WEST, FL									
97C MS										1005 MS										1014 MS										1014 MS										1016 MS									
300	31	359	14.5	11.1	23	4	30	100	23.4	22.2	20	3	31	5	21.7	18.0	26	7	31	3	26.8	24.1	09	5.40	31	3	27.4	24.0	12	1.5																			
480	31	576	17.1	11.7	26	2	10	60	24.4	22.6	23	4	31	127	21.7	17.2	27	1.6	31	124	25.4	22.0	08	6.7	31	143	27.0	23.6	12	2.8																			
900	31	998	16.1	3.4	27	4.5	7	100	22.7	15.5	22	1.7	31	1036	19.7	13.4	26	8.1	31	1042	19.8	15.4	09	8.7	31	596	23.7	20.3	13	2.8																			
850	31	1482	13.1	3.6	4.9	5.9	3	100	17.9	12.1	17	1.1	31	1525	14.4	7.4	27	5.1	31	1532	16.2	11.1	09	7.8	31	1561	18.0	10.0	14	3.1																			
800	31	1499	10.7	1.29	7	20.81	17.1	6.1	14	1.2	2036	12.1	6.28	6.5	31	2047	14.3	6.4	09	6.6	31	2078	15.1	6.2	15	2.7																							
750	31	1525	7.5	-3.3	24	4.5	10	629	17.1	1.1	1.6	31	2575	10.0	-4.1	28	7.7	31	2591	12.1	-1.5	10	5.4	31	2623	12.2	2.1	15	2.5																				
700	31	1600	4.3	-7.4	10.4	7	1207	10.1	-1.7	1.4	31	3145	7.0	-6.6	28	9.5	31	3166	9.7	-9.8	09	3.1	31	3198	8.8	-1.4	14	2.1																					
650	31	1607	-1.0	-10.0	12.1	10	1401	7.1	-6.4	1.4	31	3751	5.8	-9.9	28	10.4	31	3768	6.7	-11.0	09	2.8	31	3806	5.1	-5.4	14	2.5																					
600	31	1613	-3.5	-15.1	13.1	13	1607	4.1	-11.2	0.7	1.4	31	4381	4.0	-13.9	27	11.1	31	4393	5.7	-14.0	08	1.1	31	4457	4.1	-8.0	10	4.1																				
550	31	5012	-7.3	-19.9	29	16.3	30	1688	-2.1	-14.8	0.7	2.7	31	5089	-4.2	-19.0	28	11.5	31	5129	-1.5	-10.8	13	1.2	31	5153	-2.5	-12.4	07	1.5																			
500	31	5748	-12.0	-25.7	18	17.5	30	1919	-6.4	-20.2	0.6	2.7	31	5834	-9.0	-24.0	27	11.6	31	5881	-6.2	-21.6	13	1.5	31	5904	-6.9	-17.9	08	2.0																			
450	31	6488	-18.1	-30.9	29	18.4	30	6736	-11.1	-27.4	0.4	3.9	31	6642	-14.1	-28.8	28	12.6	31	6698	-11.5	-25.9	22	1.5	31	6719	-11.7	-23.9	06	2.7																			
400	31	7448	-23.7	-37.0	26	21.2	30	7629	-17.4	-33.7	0.2	3.5	31	7525	-20.4	-33.7	28	13.6	31	7690	-17.5	-31.8	25	3.1	29	7611	-17.3	-30.9	06	3.3																			
350	31	8488	-31.0	-42.7	29	24.5	30	8694	-24.0	-38.8	0.6	3.6	31	8503	-27.1	-39.3	28	16.1	31	8680	-24.2	-37.5	26	5.8	26	8602	-24.2	-36.3	4.1																				
300	31	8456	-39.0	-48.0	29	27.4	30	8740	-32.7	-46.5	0.7	3.4	31	8648	-36.0	-46.3	27	16.2	31	8840	-34.5	-44.4	24	1.4	29	8855	-34.5	-43.3	05	5.9																			
250	31	8682	-47.2	-57.3	28	33.1	30	9078	-42.7	-56.7	0.3	3.3	31	101832	-52.7	-57	17.4	31	1004	-42.6	-42.6	26	12.0	29	10063	-42.5	-42.5	0.9	7.1																				
200	31	1218	-52.7	28	35.4	30	12452	-53.1	32	3.3	12293	-53.4	29	20.7	31	12410	-54.4	26	14.8	29	12431	-54.5	0.5	10.5	26	14.8	12431	-54.5	0.5	10.5																			
175	31	13	-52.1	28	32.1	30	11302	-58.1	34	2.4	13148	-57.7	29	20.7	31	13253	-61.1	26	15.8	29	13274	-60.0	0.5	11.6	26	15.8	13274	-60.0	0.5	11.6																			
150	31	1318	-52.7	28	28.1	30	14258	-61.1	01	2.4	14123	-60.6	26	16.7	30	14194	-67.9	26	15.5	29	14221	-65.8	0.5	11.6	26	15.5	14221	-65.8	0.5	11.6																			
125	31	1618	-56.4	28	19.7	30	16162	-68.1	01	4.4	15263	-68.1	26	13.1	30	15275	-72.7	26	11.5	29	15321	-68.5	0.6	10.7	26	11.5	15321	-68.5	0.6	10.7																			
100	31	18618	-56.1	28	12.7	30	16652	-69.1	01	4.4	16648	-60.9	26	1.4	30	16680	-72.4	26	1.0	29	16653	-69.1	0.6	9.9	26	1.0	16653	-69.1	0.6	9.9																			
75	29	44	-55.9	28	6.5	30	11034	-66.1	08	1.5	18039	-59.4	29	3.5	25	18097	-70.3	09	10.6	29	17990	-67.7	0.8	11.8	29	10.6	17990	-67.7	0.8	11.8																			
50	29	18	-54.1	30	4.7	30	18184	-62.1	08	4.4	18879	-57.6	31	1.2	22	18892	-69.7	07	13.7	29	18797	-65.9	0.9	15.2	29	13.7	18797	-65.9	0.9	15.2																			
25	28	19	-53.1	05	11.2	30	19181	-60.1	07	1.2	19856	-51.1	07	1.6	20	19626	-64.9	09	16.6	29	19740	-62.6	0.9	18.4	29	16.6	19740	-62.6	0.9	18.4																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	20744	-60.6	09	17.8	29	20876	-58.0	0.9	20.3	29	17.8	20876	-58.0	0.9	20.3																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	20744	-60.6	09	17.8	29	20876	-58.0	0.9	20.3	29	17.8	20876	-58.0	0.9	20.3																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	20744	-60.6	09	17.8	29	20876	-58.0	0.9	20.3	29	17.8	20876	-58.0	0.9	20.3																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	20744	-60.6	09	17.8	29	20876	-58.0	0.9	20.3	29	17.8	20876	-58.0	0.9	20.3																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	20744	-60.6	09	17.8	29	20876	-58.0	0.9	20.3	29	17.8	20876	-58.0	0.9	20.3																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	20744	-60.6	09	17.8	29	20876	-58.0	0.9	20.3	29	17.8	20876	-58.0	0.9	20.3																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	20744	-60.6	09	17.8	29	20876	-58.0	0.9	20.3	29	17.8	20876	-58.0	0.9	20.3																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	20744	-60.6	09	17.8	29	20876	-58.0	0.9	20.3	29	17.8	20876	-58.0	0.9	20.3																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	20744	-60.6	09	17.8	29	20876	-58.0	0.9	20.3	29	17.8	20876	-58.0	0.9	20.3																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	20744	-60.6	09	17.8	29	20876	-58.0	0.9	20.3	29	17.8	20876	-58.0	0.9	20.3																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	20744	-60.6	09	17.8	29	20876	-58.0	0.9	20.3	29	17.8	20876	-58.0	0.9	20.3																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	20744	-60.6	09	17.8	29	20876	-58.0	0.9	20.3	29	17.8	20876	-58.0	0.9	20.3																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	20744	-60.6	09	17.8	29	20876	-58.0	0.9	20.3	29	17.8	20876	-58.0	0.9	20.3																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	20744	-60.6	09	17.8	29	20876	-58.0	0.9	20.3	29	17.8	20876	-58.0	0.9	20.3																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	20744	-60.6	09	17.8	29	20876	-58.0	0.9	20.3	29	17.8	20876	-58.0	0.9	20.3																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	20744	-60.6	09	17.8	29	20876	-58.0	0.9	20.3	29	17.8	20876	-58.0	0.9	20.3																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	20744	-60.6	09	17.8	29	20876	-58.0	0.9	20.3	29	17.8	20876	-58.0	0.9	20.3																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	20744	-60.6	09	17.8	29	20876	-58.0	0.9	20.3	29	17.8	20876	-58.0	0.9	20.3																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	20744	-60.6	09	17.8	29	20876	-58.0	0.9	20.3	29	17.8	20876	-58.0	0.9	20.3																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	20744	-60.6	09	17.8	29	20876	-58.0	0.9	20.3	29	17.8	20876	-58.0	0.9	20.3																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	20744	-60.6	09	17.8	29	20876	-58.0	0.9	20.3	29	17.8	20876	-58.0	0.9	20.3																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	20744	-60.6	09	17.8	29	20876	-58.0	0.9	20.3	29	17.8	20876	-58.0	0.9	20.3																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	20744	-60.6	09	17.8	29	20876	-58.0	0.9	20.3	29	17.8	20876	-58.0	0.9	20.3																			
0	27	21	-51.3	05	1.4	30	20946	-57.1	05	12.2	21023	-53.1	05	4.6	20	2																																	

# RAWINSONDE DATA

Average monthly values

KING SALMON, AK 1009 MB										KOTZEBUE, AK 1009 MB										LAKE CHARLES, LA 1015 MB										
Resultant Wind										Resultant Wind										Resultant Wind										
Standard pressure surface mb	No of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction lens of deg	Speed mps	No of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction lens of deg	Speed mps	No of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction lens of deg	Speed mps	No of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction lens of deg	Speed mps	No of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction lens of deg	Speed mps
SFC 31	15	10.4	8.6	1.1	2.1	3.1	30	27.4	24.2	27	1.1	3.1	17.2	10.4	24.2	22.2	2.1	3.1	137	28.0	24.2	2.1	3.1	1.697	15.1	8.6	2.1	3.1		
1000 29	69	10.8	8.8	1.1	2.1	3.1	88	24.2	21.2	26	1.1	3.1	510	10.8	24.2	21.2	2.1	3.1	590	24.2	21.2	2.1	3.1							
950 31	520	10.8	8.8	1.1	2.1	3.1	541	23.5	21.2	26	1.1	3.1	510	10.8	24.2	21.2	2.1	3.1	590	24.2	21.2	2.1	3.1							
900 31	969	8.3	4.2	2.2	4.0	3.1	1,013	20.7	18.2	27	3.6	3.1	559	8.3	21.9	14.4	3.6	3.1	1,063	21.9	14.4	3.6	3.1							
850 31	1,440	6.2	1.1	2.2	3.1	3.1	1,507	17.9	14.8	27	3.1	3.1	1,429	5.8	19.1	11.1	3.1	3.1	1,559	19.1	11.1	3.1	3.1							
800 31	1,935	3.8	-1.0	2.1	3.1	3.1	2,025	15.4	11.5	27	2.3	3.1	1,922	2.5	16.3	6.7	13	2.3	2,077	16.3	6.7	13	2.3	3.1	1,934	18.1	2.3	20	1.3	
750 31	2,453	1.1	-4.1	2.1	2.7	3.1	2,571	1.7	8.8	26	1.3	3.1	2,441	-1.1	11.8	1.1	18	1.3	2,624	11.8	1.1	18	1.3	3.1	2,453	15.1	1.1	22	1.7	
700 31	3,010	-1.9	-10.9	2.1	2.7	3.1	3,149	9.6	-7.7	28	3.1	3.1	2,991	-9.1	-10.8	3.1	21	3.1	3,201	9.6	-7.7	28	3.1	3.1	3,010	11.1	-2.1	24	4.5	
650 31	3,596	-8.8	-18.4	2.5	3.3	3.1	3,761	-1.3	1.7	23	7.1	3.1	3,575	-6.6	-14.3	1.9	1.1	7.1	3,813	-1.3	-7.9	10	4.7	3.1	3,596	13.7	-5.5	25	7.6	
600 31	4,222	-8.3	-18.2	2.7	3.3	3.1	4,415	-1.1	-2.7	16	1.1	3.1	4,197	-9.9	-19.1	2.2	1.2	1.1	4,464	-1.1	-12.7	0.9	4.7	3.1	4,222	15.1	-1.5	-29	5.1	
550 31	4,893	-12.5	-22.2	2.7	3.1	3.1	5,115	-1.0	-7.7	16	1.2	3.1	4,863	-14.1	-23.5	2.5	1.2	3.1	5,162	-1.0	-17.6	0.9	4.7	3.1	4,893	15.1	-3.9	-14.1	25	11.4
500 31	5,614	-17.0	-26.6	2.7	3.1	3.1	5,871	-4.9	-12.7	12	1.1	3.1	5,579	-19.1	-29.1	2.7	1.2	3.1	5,914	-4.9	-22.2	0.7	4.7	3.1	5,614	15.1	-19.9	25	12.3	
450 31	6,306	-22.4	-32.2	2.8	3.1	3.1	6,602	-17.7	-37.7	10	1.7	3.1	6,355	-24.1	-35.5	2.7	1.1	3.1	6,732	-10.4	-27.1	0.7	4.7	3.1	6,306	15.1	-27.1	25	14.2	
400 29	7,047	-29.0	-43.3	2.9	3.1	3.1	7,392	-15.4	-24.1	10	1.0	3.1	7,002	-31.2	-40.6	2.6	2.3	3.1	7,627	-16.9	-32.7	0.7	4.7	3.1	7,047	15.1	-33.4	25	16.5	
350 29	8,192	-35.9	-43.5	2.8	12.3	3.1	8,591	-21.9	-30.3	08	4.7	3.1	8,137	-38.2	-45.1	2.9	2.3	3.1	8,618	-23.3	-39.6	0.6	4.7	3.1	8,192	15.1	-27.1	25	19.6	
300 10	9,243	-43.6	-43.5	2.8	14.3	3.1	9,705	-39.7	-49.7	08	6.6	3.1	9,177	-46.2	-52.9	2.7	2.3	3.1	9,722	-32.3	-46.5	0.6	4.7	3.1	9,243	15.1	-36.4	-48.1	25	22.2
250 29	10,451	-49.9	-49.9	2.8	14.3	3.1	10,975	-40.5	-49.9	07	9.5	3.1	10,374	-52.9	-59.9	2.7	3.1	3.1	10,982	-42.3	-50.6	0.1	4.7	3.1	10,451	15.1	-45.0	25	25.7	
200 29	11,697	-56.7	-56.7	2.8	13.7	3.1	12,257	-52.6	-59.9	07	13.1	3.1	11,876	-60.9	-67.9	2.7	3.1	3.1	12,456	-53.3	-60.6	0.1	4.7	3.1	11,697	15.1	-59.9	25	27.3	
175 29	12,776	-60.2	-60.2	2.8	9.1	3.1	13,305	-59.9	-67.9	07	13.9	3.1	12,707	-67.2	-74.2	2.7	3.1	3.1	13,304	-58.9	-66.6	0.1	4.7	3.1	12,776	15.1	-66.6	25	28.1	
150 29	13,795	-66.1	-66.1	2.8	7.6	3.1	14,252	-67.1	-74.2	07	14.1	3.1	13,728	-69.9	-76.9	2.7	3.1	3.1	14,260	-64.5	-71.6	0.8	4.7	3.1	13,795	15.1	-74.2	25	29.0	
125 28	14,445	-68.6	-68.6	2.8	6.1	3.1	15,332	-74.7	-81.7	06	11.5	3.1	14,477	-81.7	-88.7	2.7	3.1	3.1	15,376	-68.6	-75.7	0.8	4.7	3.1	14,445	15.1	-81.7	25	30.4	
100 28	16,461	-69.0	-69.0	2.8	4.0	3.1	16,615	-77.4	-84.4	06	9.3	3.1	16,416	-86.9	-93.9	2.7	3.1	3.1	16,692	-69.6	-76.7	0.8	4.7	3.1	16,461	15.1	-84.4	25	31.1	
80 28	17,427	-68.7	-68.7	2.8	2.7	3.1	17,917	-71.0	-78.0	09	12.3	3.1	17,897	-86.2	-93.2	2.7	3.1	3.1	18,032	-66.6	-73.7	0.9	4.7	3.1	17,427	15.1	-81.7	25	31.8	
70 28	18,005	-68.5	-68.5	2.8	2.7	3.1	18,721	-72.1	-79.1	09	11.8	3.1	18,701	-86.5	-93.5	2.7	3.1	3.1	18,845	-63.7	-70.8	0.9	4.7	3.1	18,005	15.1	-79.1	25	32.5	
60 28	19,821	-68.1	-68.1	2.8	2.3	3.1	20,454	-63.7	-70.7	09	9.5	3.1	19,811	-85.7	-92.7	2.7	3.1	3.1	19,799	-60.4	-67.5	0.8	4.7	3.1	19,821	15.1	-76.7	25	33.2	
50 28	21,024	-67.8	-67.8	09	1.6	29	20,787	-58.8	-65.8	08	7.7	29	21,027	-85.5	-92.5	2.7	3.1	3.1	20,945	-57.0	-64.1	0.9	4.7	3.1	21,024	15.1	-73.7	25	33.9	
40 28	22,408	-66.8	-66.8	09	2.8	28	22,199	-55.4	-62.4	08	5.2	28	22,518	-84.4	-91.4	2.7	3.1	3.1	22,366	-54.5	-61.6	0.9	4.7	3.1	22,408	15.1	-70.8	25	34.6	
30 28	24,414	-64.7	-64.7	09	5.1	24	24,052	-51.0	-58.0	09	5.4	24	24,455	-83.2	-90.2	2.7	3.1	3.1	24,722	-51.1	-58.2	0.9	4.7	3.1	24,414	15.1	-67.9	25	35.3	
25 28	25,639	-63.1	-63.1	09	4.7	27	25,246	-46.0	-53.0	10	5.7	27	25,682	-81.8	-88.8	2.7	3.1	3.1	25,944	-48.9	-56.0	0.9	4.7	3.1	25,639	15.1	-65.0	25	36.0	
20 28	27,153	-60.7	-60.7	09	7.4	25	26,721	-41.7	-48.7	10	7.1	25	27,153	-86.9	-93.9	2.7	3.1	3.1	27,454	-46.7	-53.8	0.9	4.7	3.1	27,153	15.1	-62.1	25	36.7	
15 28	29,124	-37.5	-37.5	09	7.4	25	28,697	-36.7	-43.7	10	11.6	26	29,186	-36.1	-43.1	2.7	3.1	3.1	29,687	-38.1	-45.2	0.9	4.7	3.1	29,124	15.1	-39.6	25	37.4	
10 13	31,445	-32.5	-32.5	11	11	31,265	-41.1	-48.1	10	16.9	15	31,731	-31.1	-38.1	2.7	3.1	3.1	31,553	-39.8	-46.9	0.9	4.7	3.1	31,445	15.1	-37.8	25	38.1		
7							33,857	-36.8																						

LINCOLN, AK 1014 MB										LITTLE ROCK, AR 994 MB										LEWISVILLE, TX 1001 MB										
Resultant Wind										Resultant Wind										Resultant Wind										
Standard pressure surface mb	No of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction lens of deg	Speed mps	No of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction lens of deg	Speed mps	No of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction lens of deg	Speed mps	No of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction lens of deg	Speed mps	No of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction lens of deg	Speed mps
SFC 31	36	24.6	21.5	0.7	5.8	3.1	79	25.6	20.5	26	1.3	3.1	130	24.6	21.5	0.7	5.8	3.1	103	11.4	9.4	2.1	3.1	3	24.6	21.5	0.7	5.8		
1000 31	155	23.8	20.8	0.7	6.8	3.1	155	24.6	21.5	26	2.5	3.1	140	24.7	21.6	2.1	2.6	3.1	129	13.3	9.7	2.8	1.5	3.1	94	27.1	23.7	0.8	3.0	
950 31	602	20.1	19.1	1.3	8.1	3.1	602	26.4	16.6	26	5.7	3.1	589	26.0	18.2	2.2	5.1	3.1	570	12.5	7.6	2.1	1.3	3.1	548	23.8	22.1	0.9	3.8	
900 31	1,068	17.1	15.9	0.8	6.1	3.1	1,060	24.4	12.4	26	5.3	3.1	1,064	23.4	15.2	2.0	3.7	3.1	972	9.8	5.0	2.1	1.9	3.1	1,020	21.0	18.6	1.0	4.2	
850 31	1,555	14.1	10.6	0.8	7.6	3.1	1,550	21.7	9.0	26	2.8	3.1	1,561	20.7	11.5	1.7	3.7	3.1	1,564	9.6	3.4	1.9	2.7	3.1	1,515	15.6	12.1	1.0	4.5	
800 31	2,065	12.8	8.0	0.9	7.5	3.1	2,060	15.1	5.1	23	3.1	3.1	2,062	11.1	9.9	1.6	2.9	3.1	1,940	3.1	1.1	1.9	3.2	3.1	2,030	16.0	12.1	1.0	5.1	
750 31	2,606	10.9	-4.3	0.9	6.1	3.1	2,630	15.0	-1.4	22	3.1	3.1	2,630	13.9	-1.0	1.3	3.7	3.1	2,461	-1.1	-1.8	1.9	3.2	3.1	2,581	13.1	6.5	1.0	5.8	
700 31	3,179	8.4	-10.9	0.8	4.0	3.1	3,210	10.5	-5.5	28	3.3	3.1	3,210	10.4	-5.5	1.2	4.7	3.1												



# RAWINSONDE DATA

Average monthly values

JULY 1980

NASHVILLE, TN 995 MB										NORMAN, OK 1005 MB										NORTH PLATT, NE 917 MB										OAKLAND, CA 1014 MB										OMAHA, NE 967 MB																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
Standard pressure surface mb		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
SFC	31	140	22.3	20.7	16	.8	30	10.2	6.8	34	4	31	E47	18.6	12.9	09	1.2	31	E	14.0	12.0	27	1.5	31	403	21.6	17.0	11	1	8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1000	31	586	25.3	19.2	26	4.0	30	11.2	7.3	31	1.0	31	558	15.7	6.6	26	1.9	31	125	13.3	12.8	26	1.9	31	550	23.6	15.9	16	1.0	.8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
950	31	1.061	23.3	14.4	27	4.9	30	952	7.3	3.1	1.6	31	1.012	22.2	12.5	13	1.2	31	1.023	20.5	1.1	26	2.3	31	1.025	24.7	10.6	26	4.1	1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
850	31	1.558	20.1	11.4	27	4.8	30	1.421	4.8	.17	1.9	31	1.511	23.4	7.4	21	2.7	31	1.515	19.0	-1.8	22	2.9	31	1.525	22.5	8.6	28	7.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
800	31	2.080	17.3	6.5	29	4.6	30	1.913	2.4	-3.9	1.9	31	2.038	21.0	4.3	24	3.9	31	2.033	16.6	-3.9	21	4.1	31	2.050	19.5	3.5	28	7.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
750	31	2.628	14.2	1.1	30	4.2	30	2.433	.2	-8.4	1.6	31	2.593	17.3	1.8	25	4.2	31	2.579	13.4	-6.7	20	4.4	31	2.602	15.6	1.2	27	8.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
700	31	3.207	10.7	-3.5	31	4.6	30	2.984	-2.4	-13.7	1.3	31	3.176	12.5	-5.2	26	4.7	31	3.155	9.8	-10.2	20	4.9	31	3.182	11.2	-7.7	27	8.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
650	31	3.821	6.8	-7.3	32	5.1	32	3.569	-5.4	-16.4	1.8	31	3.793	7.5	-2.4	26	5.3	31	3.766	5.8	-13.5	20	5.3	31	3.797	8.7	-3.8	27	9.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
600	31	4.473	2.5	-11.9	32	4.9	30	4.192	-9.4	-19.8	1.9	31	4.446	2.3	-5.1	27	6.5	31	4.416	1.5	-16.3	21	5.9	31	4.448	1.6	-7.2	27	9.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
550	31	5.171	-1.9	-16.0	32	5.1	30	4.859	-13.7	-25.5	1.9	31	5.143	-2.7	-9.8	27	8.1	31	5.110	-3.1	-19.8	21	6.8	31	5.145	-2.7	-13.4	27	9.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
500	31	5.922	-6.7	-22.0	32	4.9	30	5.577	-18.4	-30.5	2.0	1.6	31	5.892	-7.5	-18.4	27	8.9	31	5.858	-8.2	-25.8	22	8.5	31	5.894	-7.5	-19.1	27	11.3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
450	31	6.738	-11.7	-27.8	32	5.4	30	6.355	-23.9	-36.6	1.7	31	6.705	-12.6	-24.1	26	10.0	31	6.667	-13.7	-30.9	22	9.2	31	6.707	-12.5	-24.9	28	12.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
400	31	7.670	-17.4	-33.3	32	6.5	30	7.204	-37.2	-41.0	1.6	1.0	31	7.594	-18.8	-31.5	26	10.9	31	7.550	-20.4	-36.4	22	11.0	31	7.596	-18.6	-32.1	28	13.7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
350	31	8.617	-25.1	-38.4	32	6.9	30	8.144	-43.2	-45.8	1.6	1.4	31	8.578	-25.9	-37.6	27	11.7	31	8.526	-28.1	-43.1	22	13.8	31	8.581	-25.7	-37.8	28	14.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
300	31	9.716	-33.3	-46.0	31	7.3	30	9.188	-45.0		2.1	1.3	31	9.673	-34.5	-44.6	26	12.8	31	9.612	-36.4	-50.2	22	15.8	31	9.676	-34.3	-45.1	28	15.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
250	31	10.972	-42.5		31	8.6	30	10.391	-50.1		2.7	3.7	31	10.922	-44.0		26	15.3	31	10.852	-45.8		22	19.4	31	10.926	-44.0		28	16.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
200	31	12.407	-52.2		31	10.6	30	11.852	-59.9		2.7	7.3	31	12.389	-52.7		27	16.7	31	12.314	-54.8		22	20.4	31	12.392	-53.1		28	18.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
175	31	13.301	-57.1		32	9.9	30	12.733	-62.2		2.7	4.6	31	13.244	-56.7		28	15.9	31	13.171	-55.2		22	20.2	31	13.245	-57.0		28	18.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
150	31	14.264	-62.6		32	7.6	30	13.754	-67.0		2.7	3.7	31	14.210	-61.2		28	13.9	31	14.147	-58.9		23	17.5	31	14.211	-61.3		28	16.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
125	31	15.376	-66.8		32	5.7	30	14.961	-67.1		2.7	3.1	31	15.334	-63.4		27	10.1	31	15.283	-61.8		23	11.8	31	15.334	-64.2		28	12.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
100	31	16.723	-66.5		31	3.1	30	16.348	-67.1		2.8	1.8	31	16.695	-65.1		27	6.1	31	16.659	-63.2		22	4.0	31	16.695	-65.0		29	7.3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
80	31	18.041	-64.1		30	3.0	30	17.916	-66.9		32	5.2	31	18.063	-62.3		29	2.5	30	18.031	-62.3		15	2.0	31	18.065	-62.2		30	1.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
60	31	19.263	-61.8		30	4.0	30	18.802	-66.4		30	1.2	31	18.894	-59.4		30	8.7	31	18.804	-60.2		10	5.7	31	18.896	-60.0		31	6.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
40	31	19.865	-58.9		30	7.7	30	19.826	-64.4		30	1.2	30	19.864	-56.4		30	2.3	29	19.828	-57.8		09	5.3	31	19.869	-55.5		0.7	2.7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
20	31	21.017	-55.9		30	10.1	30	21.039	-45.4		30	2.5	30	21.029	-54.4		30	4.5	28	20.986	-55.3		10	6.8	31	21.032	-54.6		0.8	4.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
0	31	22.447	-52.8		30	11.5	30	22.528	-45.4		30	3.7	30	22.469	-51.7		30	5.6	28	22.415	-53.8		09	8.4	30	22.469	-52.0		0.9	6.7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
25	31	24.320	-49.6		30	11.9	30	24.450	-43.9		30	5.0	30	24.346	-49.0		30	7.7	26	24.279	-50.4		09	10.8	30	24.349	-49.0		0.9	8.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
25	31	25.520	-47.6		30	13.0	30	25.678	-42.8		30	6.1	30	25.547	-47.3		30	9.6	25	25.474	-48.5		09	12.0	30	25.546	-47.2		0.9	9.3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
15	31	27.007	-43.1		30	13.4	30	27.187	-39.2		30	6.1	30	26.984	-49.8		30	11.4	24	26.915	-49.8		09	13.7	30	27.007	-43.1		0.9	10.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
15	31	28.944	-38.1		30	16.2	24	29.158	-38.1		30	6.5	28	28.967	-42.1		30	12.0	22	28.874	-43.6		09	15.7	30	28.961	-42.5		0.9	12.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
7	31	31.776	-32.3		30	19.9	11	31.990	-33.1		30	8.5	25	31.734	-37.4		30	14.6	19	31.621	-39.4		09	17.9	25	31.735	-37.4		0.9	16.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
											12	34.186	-33.7												10	34.211	-34.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		



## Average monthly values

1947-1948

**Average monthly values**

JULY 1980

- 24 -

# SOLAR RADIATION INTENSITIES

Tabulated in langleys per minute on a surface normal to the direction of the sun.

Sun's zenith distance										Sun's zenith distance											
A.M.					•	P.M.					A.M.					•	P.M.				
Date	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°	Date	78.7°	75.7°	70.7°	60.0°	60.0°		70.7°	75.7°	78.7°		
MAUNA LOA OBSERVATORY, HI										TUSCON, AZ											
Air mass										Air mass											
	3.34	2.67	2.01	1.54	*	1.34	2.01	2.67	3.34												
1-----	1.10	1.18	1.27	1.39	1.52	1.37	1.27	1.19	1.12												
2-----	1.13	1.20	1.29	1.40	1.53	1.39	1.28	1.20	1.13												
3-----	1.12	1.20	1.29	1.40	-----	-----	-----	-----	-----												
4-----	1.12	1.20	1.28	1.38	1.50	-----	-----	-----	-----												
5-----	1.08	1.16	1.25	1.35	-----	-----	-----	-----	-----												
6-----	1.11	1.19	1.26	1.37	-----	-----	-----	-----	-----												
7-----	1.10	1.18	1.26	1.37	1.50	-----	-----	-----	-----												
8-----	1.11	1.17	1.25	1.36	-----	-----	-----	-----	-----												
9-----	1.12	1.20	1.29	1.40	1.51	-----	-----	-----	-----												
10-----	-----	-----	-----	-----	1.54	1.39	1.30	1.22	1.15												
11-----	1.13	1.20	1.28	1.39	-----	-----	-----	-----	-----												
12-----	1.06	1.17	1.26	1.37	-----	-----	-----	-----	-----												
13-----	1.16	1.22	1.31	1.42	1.54	-----	-----	-----	-----												
14-----	1.13	1.21	1.30	1.40	1.54	-----	-----	-----	-----												
15-----	1.12	1.21	1.30	1.40	1.53	1.37	1.26	1.18	1.08												
16-----	1.18	1.26	1.35	1.45	1.59	1.45	1.35	1.26	1.17												
Average	1.13	1.20	1.28	1.39	1.53	1.39	1.29	1.21	1.13												

## NET RADIATION

Radiation in langleys per day (8 a.m. to 8 a.m.) at Palmer, Alaska.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langleys	88	164	202	113	221	75	127	137	189	155	78	58	61	82	246	74	117	163	224	198	192	175	204	163	70	58	26	29	183	62	130	145



# REFERENCE NOTES

## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES:

Dates in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

- + And also on an earlier date or dates.
- D Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snowfall.

## CLIMATOLOGICAL DATA - METRIC UNITS: Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

- B Number of days maximum 21.1°C. or above for Alaskan Stations.
- Y Peak Gust.
- + And also on an earlier date or dates.
- U Indicates Urban site.
- R Indicates Rural site.
- Ø Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

$$1 \text{ foot} = 0.3048 \text{ meters}$$

$$^{\circ}\text{F.} = \frac{9}{5} \times ^{\circ}\text{C} + 32$$

$$1 \text{ inch} = 25.4 \text{ millimeters}$$

$$1 \text{ mile per hour} = 0.447 \text{ meters per second}$$

## HEATING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

## COOLING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

## STORM SUMMARY:

- o Includes crop damage.
- C Crop damage.
- \* No occurrence of storms or unusual weather phenomena reported.
- @ Includes heavy sleet storm.
- # Freezing drizzle and freezing rain, commonly known as glaze.
- Ø For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.
- \* No Storm Data Report received for this State.
- ◇ Report Incomplete.
- † Storm damages are placed in categories varying from 1 to 9 as follows:
  - 1 Less than \$50
  - 2 \$50 to \$500
  - 3 \$500 to \$5,000
  - 4 \$5,000 to \$50,000
  - 5 \$50,000 to \$500,000
  - 6 \$500,000 to \$5 Million
  - 7 \$5 Million to \$50 Million
  - 8 \$50 Million to \$500 Million
  - 9 \$500 Million to \$5 Billion

## RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, G.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Dew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Dew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Dew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygrometers. These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

- \* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.
- + Observations for these stations are scheduled at 0000 G.C.T.
- † Dew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Dew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Dew Point temperatures replaced Relative Humidity January 1967.

SOLAR RADIATION INTENSITIES: Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

( )	Clouds Present	DM	Moderate Dust	HM	Moderate Haze	KS	Slight Smoke
*	Values corresponding to true solar noon	DS	Slight Dust	HS	Slight Haze	M	Moderate Haze-indeterminable
BD	Blowing Dust	F	Fog	I	Intense Haze-indeterminable		
BN	Blowing Sand	GF	Ground Fog	K	Smoke	N	Sand
D	Dust	H	Haze	KI	Intense Smoke	S	Slight Haze-indeterminable
DI	Intense Dust	HI	Intense Haze	KM	Moderate Smoke		

NET RADIATION: The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of sod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.

## DESCRIPTION OF CHARTS

CHART I. A. NORMAL DAILY AVERAGE TEMPERATURE ( $^{\circ}\text{F}$ . 1941-70) FOR MONTH. B. TEMPERATURE DEPARTURE FROM 30-YEAR MEAN ( $^{\circ}\text{F}$ . 1941-70) FOR MONTH. Chart I-A is reproduced from monthly normals maps prepared at the National Climatic Center. Chart I-B is a reproduction of monthly chart appearing in "Weekly Weather and Crop Bulletin," a publication of Environmental Data Service.

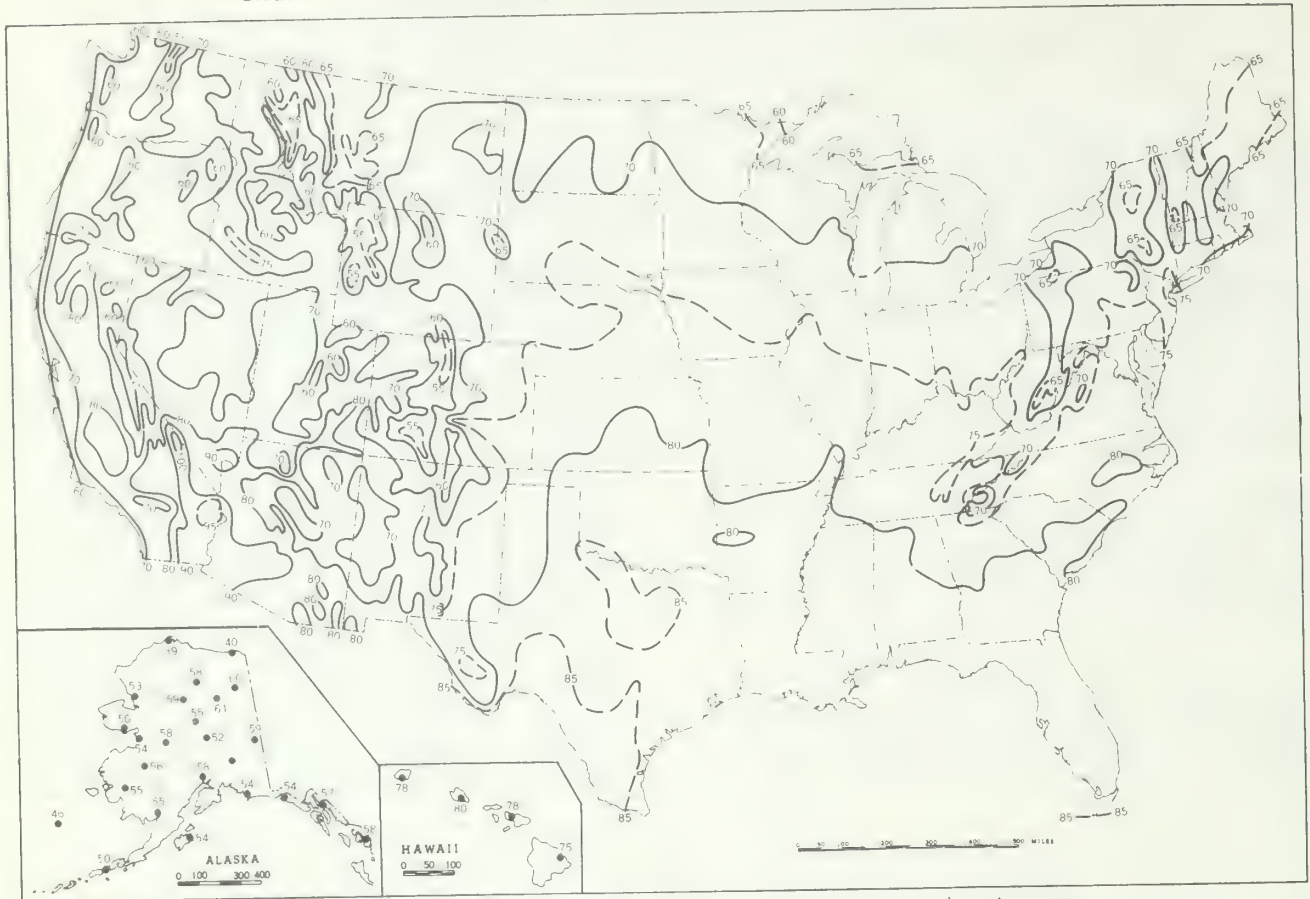
CHART II. A. TOTAL PRECIPITATION. Chart II. A. is a reproduction of monthly chart appearing in "Weekly Weather and Crop Bulletin."

CHART II. B. PERCENTAGE OF NORMAL PRECIPITATION. Chart II. B. is a reproduction of monthly chart appearing in "Weekly Weather and Crop Bulletin."

CHART III. TRACKS OF CENTERS OF ANTICYCLONES AT SEA LEVEL.

CHART IV. TRACKS OF CENTERS OF CYCLONES AT SEA LEVEL. Centers which can be identified for 24 hours or more are tracked in these charts. Semi-permanent features such as the Great Basin and Pacific Highs and Colorado and Mexico Lows are not shown. The 7:00 a.m., e.s.t., positions are shown by open circles, with the intermediate positions at 6-hour intervals shown by X's. The date is given above the circle and the central pressure to whole millibars below. A dashed track indicates a regeneration rather than actual movement to the next position. Squares indicate position of stationary center for period shown beside it.

Chart 1. A. Normal Daily Average Temperature (°F. 1941-70), July



B. Temperature Departure from 30 - Year Mean (°F 1941-70), July 1980

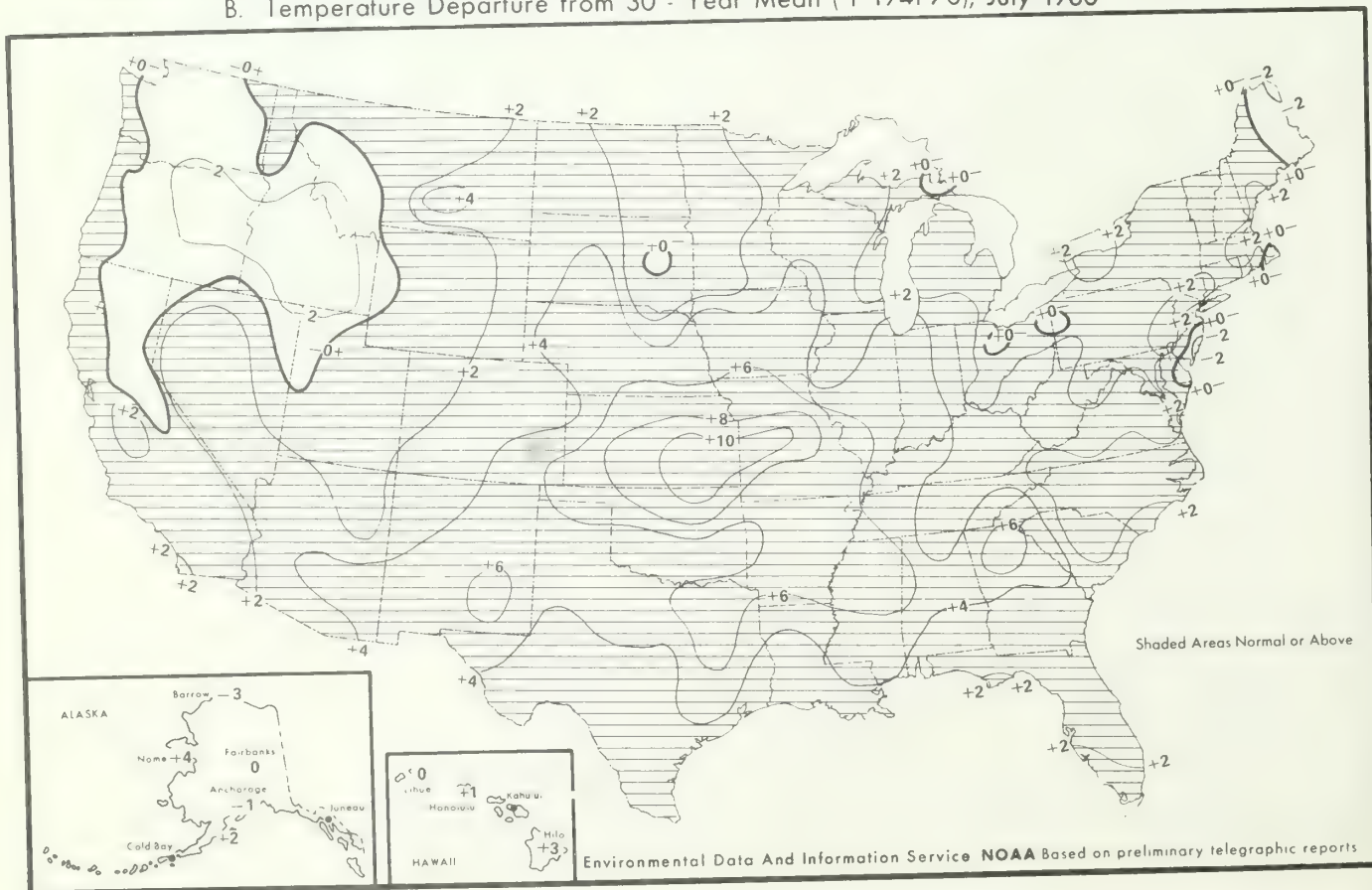
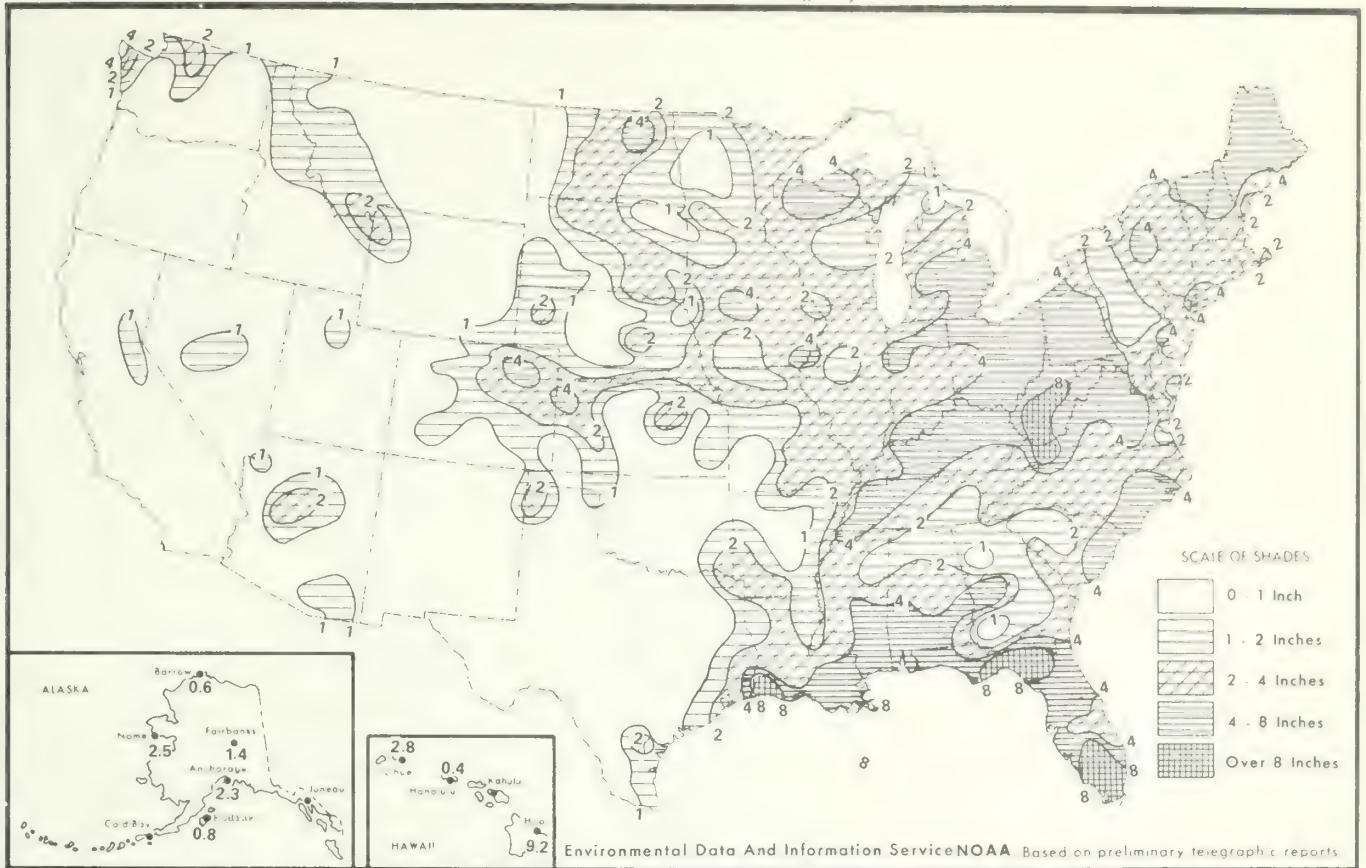




Chart II. A. Total Precipitation (Inches), July 1980



B. Percentage of Normal Precipitation, July 1980

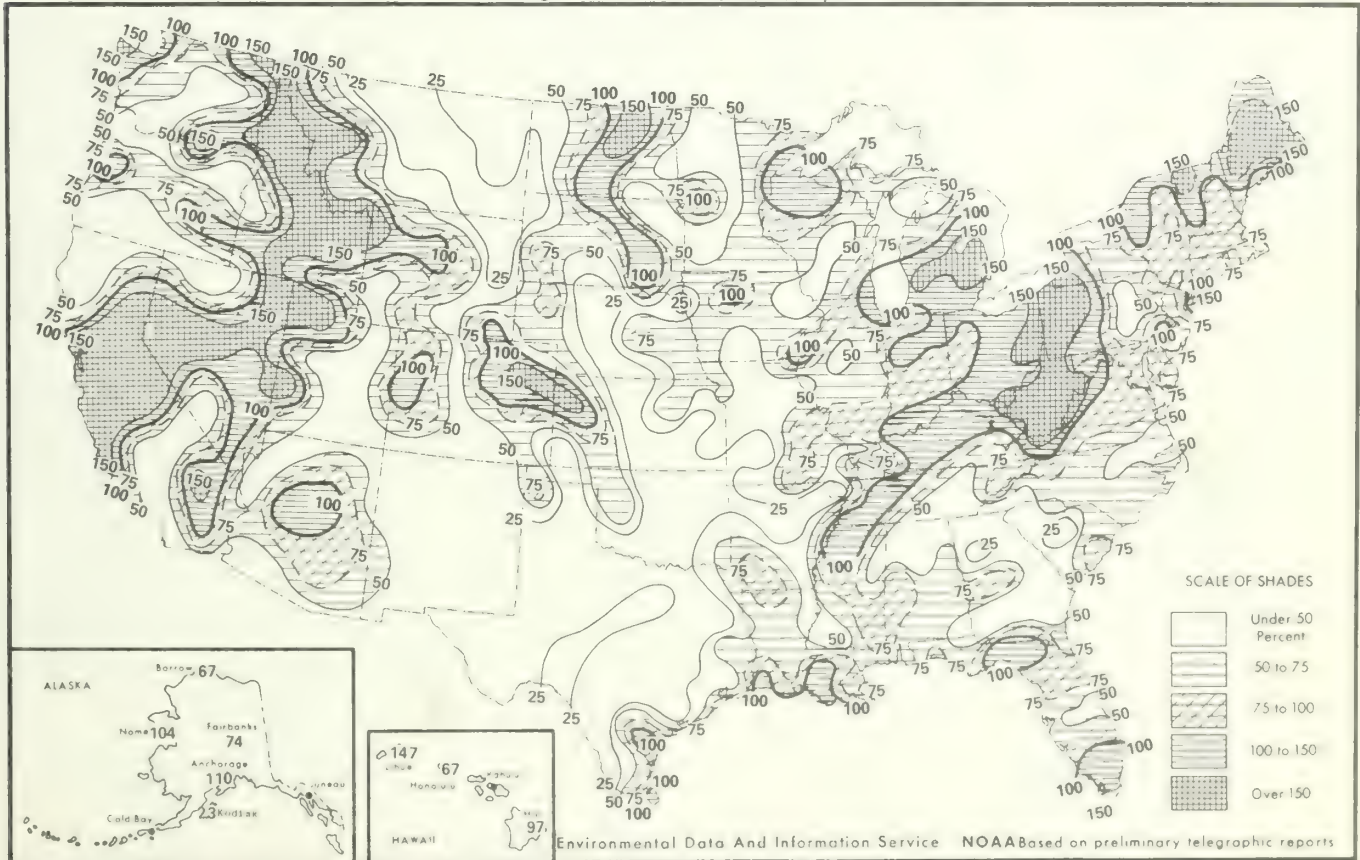


Chart III. Tracks of Centers of Anticyclones at Sea Level, July 1980

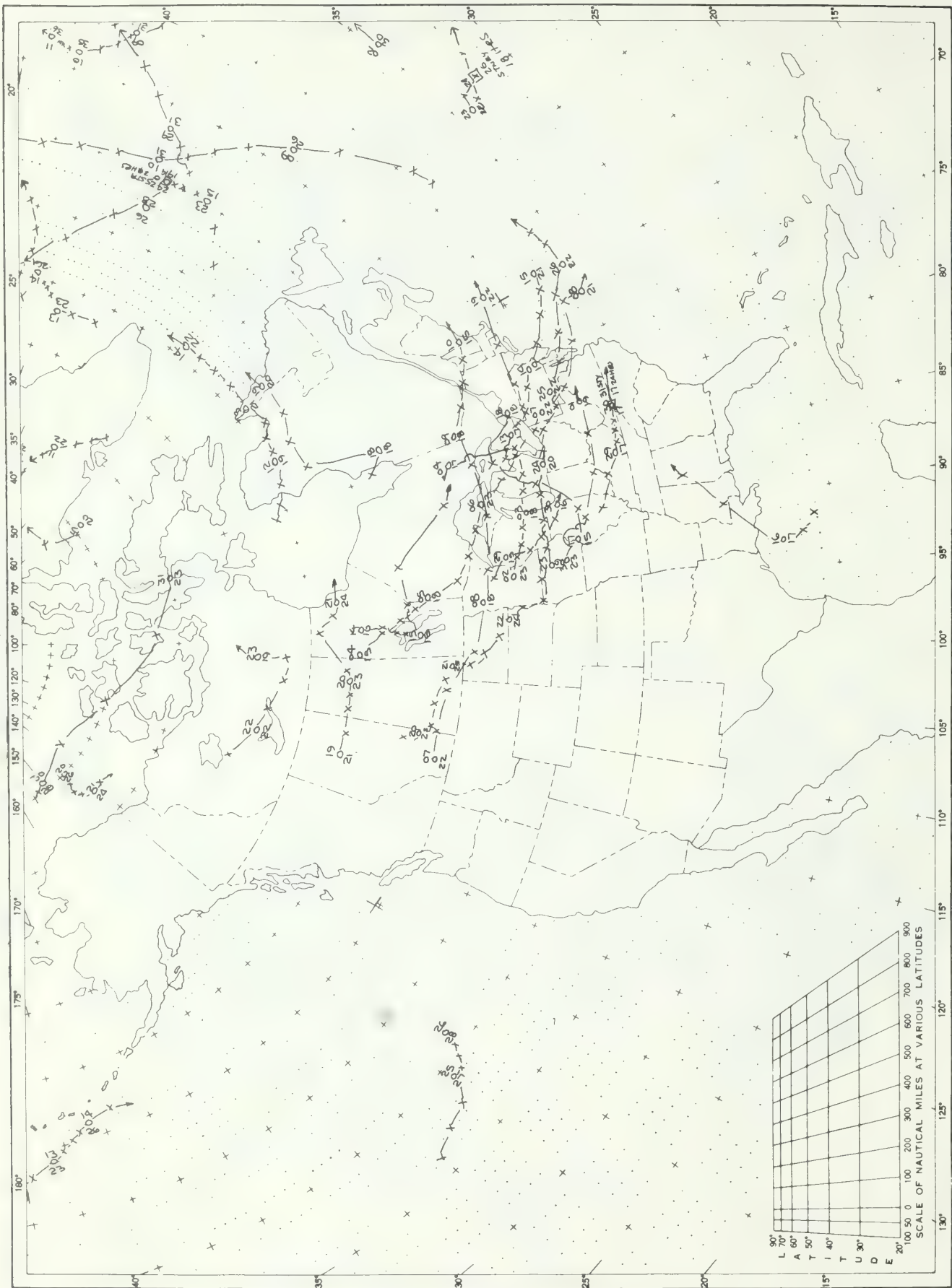
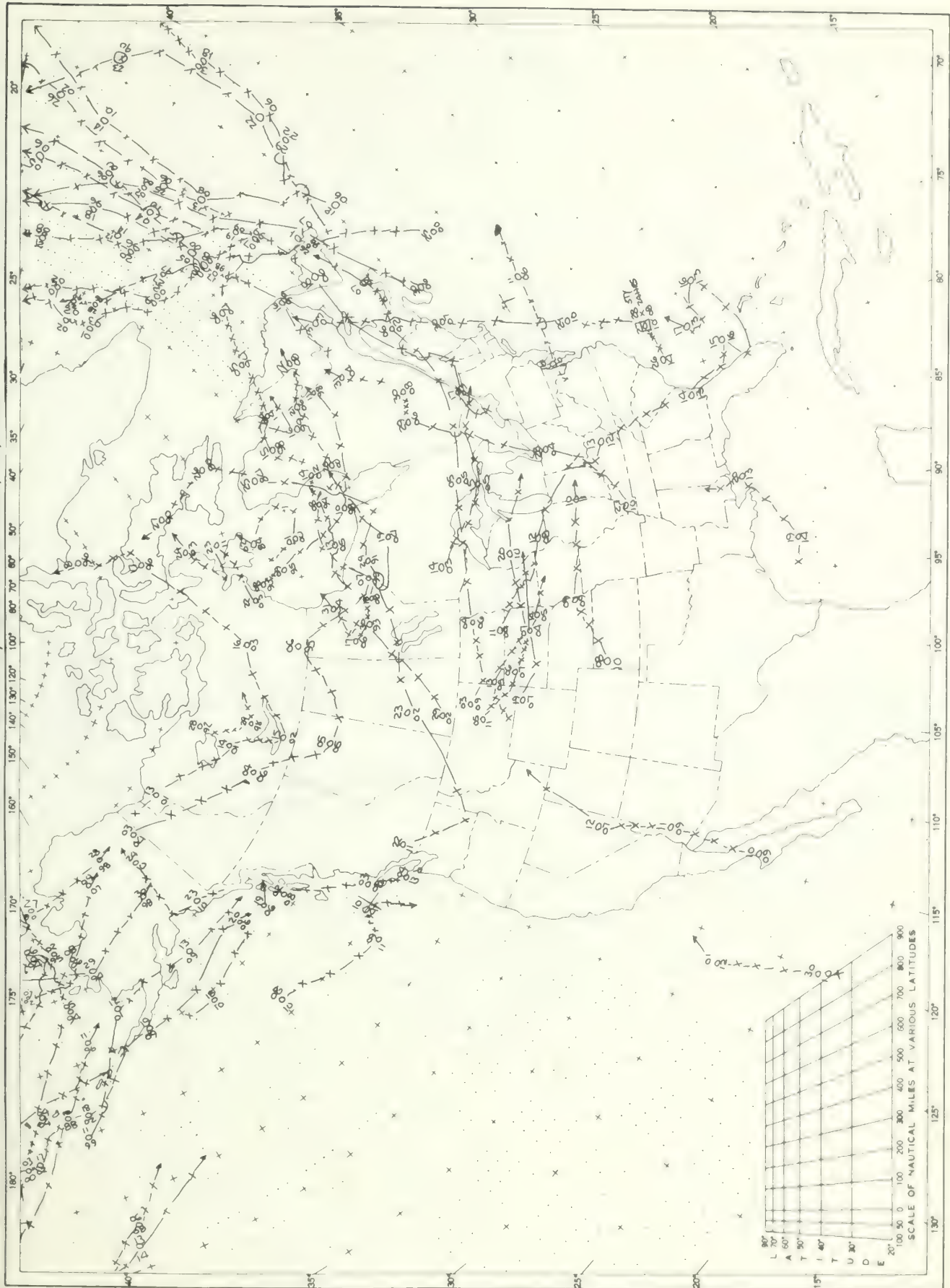




Chart IV. Tracks of Centers of Cyclones at Sea Level, July 1980



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar. X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.



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AUGUST 1980

VOLUME 31

NUMBER 8

# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



"I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF  
THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRA-  
TION AND IS COMPILED FROM INFORMATION RECEIVED AT  
THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH  
CAROLINA 28801."

*Daniel B. Mitchell*

DIRECTOR  
NATIONAL CLIMATIC CENTER

noaa

NATIONAL OCEANIC AND  
ATMOSPHERIC ADMINISTRATION

ENVIRONMENTAL DATA AND  
INFORMATION SERVICE

NATIONAL CLIMATIC CENTER  
ASHEVILLE, N.C.

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NOTE: Late reports and corrections will be carried in the June and December issues of this publication. An explanatory page "Description of Charts" will be carried in the January and July issues.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

AUGUST 1980

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist  
Environmental Data and Information Service, NOAA

**HIGHLIGHTS:** The most consistent feature of the August weather was the heat wave which began in the last week of June and continued through July and August. Average temperatures for August ranged 6 to 8° above normal. Warmer than normal temperatures spanned an area from the Southwest to the northern Mississippi Valley and eastward to the Atlantic. The Pacific Northwest, the northern Plateau and Rockies, and the northern Plains ranged cooler than normal. Rain, from thunderstorms, was well above normal from the northern Rockies to the central plains and eastward to the Appalachians. The southern Plains, the South, the Southeast, and the East Coast generally had less than half the normal rain. Coupled with high moisture demand due to the excessive heat, the lack of rain caused varying degrees of drought in these areas.

The first three days of August were hot in the South and in most of the Plains. Precipitation was light until a weak front moved through the Great Lakes and produced some moderate showers in the Lakes region and western New England.

**FIRST WEEK-** A strong low pressure center moved through southern Canada with a cold front trailing southward into the United States. Moderate to heavy rain fell in the upper Mississippi Valley, the western Great Lakes area, the upper Ohio Valley, and in the very dry eastern Kansas and northern Missouri sections, where corn and soybeans struggled to combat hot, dry weather. Late in the week, Hurricane Allen slammed into the southern Texas Coast with very diminished winds but brought heavy downpours to the dry southern Texas area. Hot weather spread over much of the Nation. Only the northern Plains, Plateau, and Rockies had cool weather. One-hundred-degree readings reached as far north as northern California, South Dakota, and Virginia.

**SECOND WEEK-** A storm system moved through New England, and another started in the northern Plains. Showers and thunderstorms were widespread from the Rockies to the East Coast and over much of the Plateau Region of the West. Kansas and Missouri

again got a good soaking. The dry areas in northeastern Texas, Arkansas, and northern Louisiana remained hot and dry. The remnants of Hurricane Allen spread rain further into southwestern Texas and New Mexico. The rapid succession of frontal passages gradually cooled the northern tier of States, but the South and most of the Plains remained warm. Hot weather in the mid-Atlantic States early in the week gave way to a cooling spell by week's end.

**THIRD WEEK-** A slow-moving cold front worked its way through the northern and central Plains and the eastern United States. A warm front held nearly stationary from the Great Lakes to the mid-Atlantic region. Showers and thunderstorms gathered along the warm front. Almost daily rain in West Virginia and adjacent States resulted in severe flooding. Isolated thunderstorms in the dry northern Oklahoma area left 2 or more inches of rain in some spots. Some light storms crept into northwestern Arkansas, but little rain fell. No rain fell in the dry wedge of eastern Texas, Arkansas, and northern Louisiana. A respite from the hot weather edged into the northern and central Plains, but warm temperatures returned to the central Plains as the cool air moved eastward.

**FOURTH WEEK-** A cool high pressure system centered in West Virginia and drifted slowly southward and eastward. Several frontal systems moved into the Plains and steered northeastward. Almost daily showers and thunderstorms rolled from the Pacific Northwest to the northern Mississippi Valley and from Kansas through the Great Lakes to New England. Circulation around the high pressure caused warm, moist air from the Gulf of Mexico to flow northward and thundershowers broke out, first in eastern Texas and then in Louisiana, Mississippi, and Alabama, moving northward to the Ohio Valley. As the south wind increased, warm air again flowed northward and enveloped the region from the central Plains to the Northeast.

# HURRICANE BONNIE

August 13 - 19, 1980

National Hurricane Center, NOAA  
Miami, Florida

An elongated cloud mass near the Cape Verde Islands developed 2 centers of action on August 13. Satellite pictures suggested that the more westward of the 2 systems became a tropical depression by 0000 GMT on the 14th. At 1545 GMT, the ship, RUDDBANK, passed through the system and reported winds of Force 8 (fresh gale) and a pressure fall of 7.2 mbs in 1.5 hours to 1003.2 mbs. At 1700 GMT, the ship's pressure fell to 999.9 mbs, and at 1714 GMT, the winds increased to Force 9 (strong gale). Upon receipt of these reports at the National Hurricane Center, the depression was upgraded to Tropical Storm Bonnie at 2200 GMT August 14th.

At the time Bonnie became a tropical storm, its companion system was located only 400 miles northeast of Bonnie's center. During the following 24 hours Bonnie moved northward and the second system tracked toward the northwest. On the 15th, the second system became a tropical depression centered 400 miles north of Bonnie's center. There were varying opinions as to how this unusual sequence of events would eventually unfold since the 2 systems were apparently interacting, and both were following unusual tracks.

Bonnie remained the dominant system and continued to strengthen as it headed generally northward, attain-

ing hurricane strength by 0000 GMT on the 16th. For the remainder of its lifetime, Bonnie passed through an area devoid of observational data, so estimates of its strength are derived solely from satellite images, and inferences regarding steering currents are based on analyses of sparse peripheral observations and satellite-derived cloud motion vectors.

The hurricane reached its maximum strength when winds increased to about 85 knots on the 16th, as it moved northward out of the tropics. The continued northward movement was not anticipated and is difficult to explain, even in retrospect.

Surface and upper-air analyses and forecasts depicted the subtropical ridge lying across Bonnie's northward track. Nevertheless, the hurricane never deviated more than 75 miles to the east or west of the 40°W meridian as it travelled 1200 miles northward into the north Atlantic. Bonnie weakened slightly on August 17th but maintained minimal hurricane strength until it became extra-tropical midway between the Azores and Newfoundland on the 19th. The hurricane never threatened land and caused no known casualties nor damage.

## Preliminary Report

DAY	HOUR (GMT)	LATITUDE	LONGITUDE	MINIMUM PRESSURE (mbs)	MAXIMUM WIND (kts)	CATEGORY
14	00	12.7	35.5	1010	25	Trop. Dep.
	06	13.5	36.6	1008	30	
	12	14.7	37.3	1005	35	
	18	15.7	37.5	1000	45	
15	00	16.7	37.8	1000	45	Trop. Storm
	06	17.7	37.9	1000	45	
	12	18.8	38.1	1000	45	
	18	20.4	38.5	995	55	
16	00	22.0	38.7	985	75	Hurricane
	06	23.7	38.9	975	85	
	12	24.8	39.1	975	85	
	18	25.8	39.4	975	85	
17	00	27.0	39.7	985	75	
	06	28.0	40.0	990	65	
	12	29.0	40.3	990	65	
	18	30.0	40.5	990	65	
18	00	31.1	40.5	990	65	
	06	32.4	40.5	990	65	
	12	34.0	40.5	990	65	
	18	35.9	40.5	990	65	
19	00	38.2	40.2	990	65	
	06	41.9	39.8	990	65	
	12	46.5	38.4	995	65	
	18	51.0	36.0	1000	45	

# HURRICANE CHARLEY

20-25 August 1980

National Hurricane Center, NOAA  
Miami, Florida

Charley originated from an extratropical low pressure system which had moved southeastward, reaching the mid-Atlantic U.S. coast on 20 August. By 20/1200 GMT, satellite pictures showed that a well-defined low-level cloud circulation center had developed and was located 130 n.mi. east northeast of Hatteras, NC. This development occurred several hundred miles north of a weak, east-west oriented frontal zone, lying between 25 and 30° North latitude.

However, the sea-surface temperature was estimated to be 27° C in the area near the vortex. This system developed as a subtropical depression, which formed within the larger envelope of a cyclonic circulation associated with the extra-tropical low referred to above.

The depression moved in a cyclonic loop for the next three days, reaching a position midway between Bermuda and Nova Scotia on the 23d. Gradually intensifying, the system reached subtropical storm intensity by 21/1200 GMT and became a hurricane with 65 kt winds by 23/0000 GMT.

While at subtropical storm strength, the storm center passed within 200 n.mi. northwest of

Bermuda. Bermuda's pressure reached a minimum of 1003.3 mb at 22/0600 GMT. A ship, 9VDR, reported a wind of 060 deg/60 kt and a pressure of 999.5 mb at 22/1200 GMT, while located just north of the center. Another ship, JBUY, reported 050 deg/50 kt and 1005.0 mb at the same time, located 100 n.mi. northwest of the center.

An Air Force reconnaissance plane investigated on the 24th and measured 989 mb and 70 kt at 1434 GMT. These measurements are the basis for estimating Charley's minimum pressure and maximum wind of the same values.

By the 24th Charley was moving due eastward, accelerating its forward speed (eventually to 45 kt by the 25th) and gradually weakening. Winds fell below 65 kt at 24/0600 GMT and Charley was no longer identifiable as a tropical storm by 26/0000 GMT. It turned to the northeast, several hundred miles west of the Azores, and was finally absorbed within the circulation of an intense North Atlantic extra-tropical cyclone on the 26th.

Charley passed directly across the North Atlantic shipping lanes on the 24th and 25th. Numerous ships reported 40 to 50-kt winds during this period. There have been no reports of deaths or damage received.

## PRELIMINARY BEST TRACK

DATE	TIME (GMT)	LAT.	LONG.	PRESSURE (MB)	WIND (KT)	STAGE
8/20	1200	36.0	73.0	1010	25	Subtropical depression
	1800	35.0	72.0	1008	25	
8/21	0000	34.0	71.0	1006	30	Subtropical storm.
	0600	33.4	69.5	1005	30	
	1200	34.0	68.0	1003	35	
	1800	34.8	66.8	1002	40	
8/22	0000	35.8	65.7	1000	45	Hurricane
	0600	37.0	64.8	998	50	
	1200	38.3	64.7	996	55	
	1800	39.1	64.2	994	60	
8/23	0000	39.6	65.2	992	65	Hurricane
	0600	38.9	66.7	990	70	
	1200	38.2	66.0	989	70	
	1800	38.0	64.7	990	70	
8/24	0000	38.0	63.1	991	65	Tropical storm
	0600	37.9	61.7	994	60	
	1200	37.9	60.2	998	55	
	1800	37.9	58.2	1000	45	
8/25	0000	36.0	55.0	1001	35	Tropical storm
	0600	38.1	51.3	1002	35	
	1200	38.2	47.0	1004	35	
	1800	38.5	42.2	1005	35	
8/26	0000	NO LONGER AN IDENTIFIABLE SYSTEM				



## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

August 1980

STATE	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest °F	Date	Station	Lowest °F	Date	Station	Greatest In.	Station	Least In.
Alabama	4 Stations	100	7	Valley Head	57	27	Chatham 4 N	6.43	Cuba	.04
Alaska	Clear Water	9	11	2 Stations	19	31+	Fort Chatham	14.54	Lonely	.11
Arizona	Willow Beach	121	12	Sunrise Mountain	31	27+	Nogales 6 N	9.06	6 Stations	.00
Arkansas	Greers Ferry Dam	111	1	Gilbert	47	24	Saint Francis	4.14	10 Stations	.00
California	Baker	124	1-	3 Stations	26	29+	Blythe	1.73	295 Stations	.00
Colorado	Las Animas	107	7	Rio Grande Reservoir	19	21	Wolf Creek Pass 1 E	7.45	Pueblo 6 SSW	.14
Connecticut	New Britain	98	1	Falls Village	17	28	Norfolk 2 SW	4.02	Norwalk Gas Plant	.54
Delaware	Millersville	98	1	Bridgeville 1 NW	51	17	Rower	3.95	Wilmington WSO AP	1.09
Florida	2 Stations	103	2+	Smith Creek	58	26	Myakka River St Park	15.99	Madison 4 N	1.11
Georgia	6 Stations	101	22+	Blairsville Exp Sta	53	27	Waycross WSMO	7.33	Lexington 1 NW	.18
Hawaii	KE-Ahole Pt 68.13	9	30+	Mauna Loa Slope Obs	15	19	Honolulu Gulch 341	14.10	3 Stations	.00
Idaho	Glenns Ferry	104	11	Stanley	17	28	Island Park Dam	3.38	Hollister	.00
Illinois	Kaskaskia R Nav Lock	106	1	2 Stations	34	14	Gladstone Dam 18	11.35	Anna 1 E	.52
Indiana	Mount Vernon	103	1	English	49	24	Greenfield	11.25	New Harmony	.94
Iowa	Rathbun Dam	103	1	Mason City	47	22	Osage	17.45	Zearing	3.64
Kansas	3 Stations	112	3+	Atchison	47	21	Elmo 1 NW	9.52	Fort Scott	.95
Kentucky	Gilbertsville Ky Dam	105	1	2 Stations	51	14+	Ivel	7.64	Columbus	.42
Louisiana	2 Stations	108	1+	Monroe	58	24	New Orleans D P S 5	6.65	2 Stations	.00
Maine	2 Stations	91	8	3 Stations	15	30+	Vanceboro 2	4.10	Ellsworth	.39
Maryland	2 Stations	100	3+	2 Stations	46	17	Oakland 1 SE	7.39	Towson	.78
Massachusetts	2 Stations	95	8+	Chester 2	37	17	Hillsdale	3.71	Nantucket FAA AP	.33
Michigan	Monroe	96	1	Kenton	34	16	Adrian 2NNE	9.20	East Jordan	.28
Minnesota	Montevideo 1 SW	99	1	Meadowland 9 S	33	31	Hokah 1 SW	12.71	Artichoke Lake	1.69
Mississippi	1 Station	105	22+	University	16	22	Columbus 4 ESE	5.09	Lexington 2 NNW	.00
Missouri	Cole Camp 9 SE	112	1	Berryman 6 NW	46	24	Windsor	13.52	Malden Municipal AP	.19
Montana	4 Stations	98	18+	Lincoln Ranger Station	14	30	Wolf Point	5.62	Potomac	.32
Nebraska	Anselmo 2 SE	109	1	Agate 3 E	32	5	Weeping Water	9.39	Scottsbluff WSO AP	.47
Nevada	Sunrise Manr Las Vegas	116	1+	Rand Ranch Palisade	24	29	Mount Rose Bowl	1.35	15 Stations	.00
New Hampshire	Wentworth Pond	96	26	Mount Washington	35	1+	Mount Washington	7.96	Surry Mountain Lake	1.32
New Jersey	Flemington 3 E	98	28	Newton St Pauls Abbey	13	17	Toms River	4.25	Plainfield	.42
New Mexico	1 Station	106	5+	2 Stations	29	21	Tucumcari FAA AP	6.65	Villanueva	.06
New York	New York Laurel Hill	99	8+	Old Forge	34	17	Sheridan	6.44	N Y Kennedy WSO AP	.85
North Carolina	Fort Yates	102	7	3 Stations	46	28+	Lake Toxaway 2 SW	6.24	Jackson	.10
North Dakota	Ironton	99	1	Dorset	34	27+	Lake Metigoshe St Pk	9.32	Reeder	1.25
Ohio	Alva	112	1	Zoe 1 E	55	24	Coshocton Sewage Plt	12.38	Lakeview 3 NE	3.00
Oklahoma	3 Stations	100	1+	Seneca	19	28	Cherokee	6.45	6 Stations	.00
Oregon	2 Stations	98	6	2 Stations	42	17+	Bonneville Dam	1.98	53 Stations	.00
Pennsylvania	San Sebastian 2 WNW	98	1	Adjuntas Substation	1	1	Uniontown 1 NE	8.96	Marcus Hook	.34
Puerto Rico	1 Station	100	27	Kingston	50	18	Lares 2 SE	14.38	Santa Isabel 2 ENE	.75
Rhode Island	1 Station	91	1	1 Station	50	18	North Foster 1 E	2.68	Newport	1.35
South Carolina	3 Stations	107	7+	Longcreek	14	26+	Lake City 1 SE	9.45	Mc Clellanville	.40
South Dakota	2 Stations	114	6	Pactola Dam	33	1	Centerville 6 SE	6.49	Oahe Dam	1.06
Tennessee	2 Stations	106	10+	2 Stations	53	25+	Woodbury 1 WNW	5.40	Lexington	1
Texas	Castolon	114	4	Mount Locke	51	11	Kingsville	17.36	18 Stations	.00
Utah	2 Stations	109	1+	2 Stations	26	22+	Escalante	2.08	Fillmore	.02
Vermont	1 Station	93	1	3 Stations	40	29+	Mount Mansfield	8.14	Union Village Dam	1.18
Virginia	1 Station	105	1	1 Station	48	29+	North Mountain	6.41	Clarksville	.00
Virgin Islands	2 Stations	96	26+	2 Stations	69	10+	Caneel Bay Plantation	4.74	Alex Hamilton Fld FAA	1.40
Washington	Whitman Mission	104	1	Glenwood 2	25	29	Tolt South Fork Resrv	5.44	4 Stations	.00
West Virginia	2 Stations	100	11+	Seneca State Forest	41	14	Morgantown L and D	11.40	Martinsburg FAA AP	2.18
Wisconsin	La Crosse FAA AP	96	1	Newald 4 N	38	16	Portage	16.09	Sturgeon Bay Exp Farm	2.82
Wyoming	Redbird	100	1	1 Station	18	4	Echeta 2 NW	5.61	Riverton	.22

# CLIMATOLOGICAL DATA

METRIC UNITS

AUGUST 1982

State and Station	Elevation (ground)	Pressure		Temperature						Precipitation						Wind			No. of days (sunrise to sunset)		Sky cover, tenths (sunrise to sunset)	Possible sunshine																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max 32° or above	Min 0° or lower	Average dew point	Average relative humidity	Total	mm	Departure from normal	Greatest in 24 hours	25 mm. or more			No. of days	Snow, ice pellets	Resultant speed	Resultant direction	Speed (1.6 kilometers)	Direction	Date																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
ALABAMA	20	101.1	101.1	17.7	12.4	15.1	1.1	18.7	14.7	18.7	24	28	0	21.1	70	72	-4	17	6	14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

## AUGUST 1980

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# CLIMATOLOGICAL DATA

## METRIC UNITS

AUGUST 1960

State and Station	Pressure		Temperature						Precipitation						Wind				No. of days (sunrise to sunset)				Possible sunshine																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	Elevation (ground)	Station Q	Average maximum		Average minimum		Average		Departure from normal		Highest		Lowest		Date		No. of days		Average dew point		Average relative humidity			Total		Departure from normal		Greatest in 24 hours		25 mm or more		With thunderstorms		Total		Snow, ice pellets		Resultant speed		Resultant direction		Speed (1.6 kilometers)		Direction		Date																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
			C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F		C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C

## MAY 1925.

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# CLIMATOLOGICAL DATA

## METRIC UNITS

AUGUST 1980

State and Station	Elevation (ground)	Pressure		Temperature										Precipitation						Wind				No. of days (sunrise to sunset)		Possible sunshine %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
		Station	Sea level	Average maximum		Average minimum		Average	Departure from normal	Highest	Date	Lowest	Date	No. of days		Average dew point	Average relative humidity	Total	mm	Departure from normal	Greatest in 24 hours	25 mm. or more	With thunderstorms				Total	mm	Snow, ice pellets	Maximum depth on ground	Resultant speed	Resultant direction	Speed (1.6 kilometers)	Direction	Date																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
				C	F	C	F	C	F	C	F	C	F	C	F	C	F							C	F											C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C



## CLIMATOLOGICAL DATA

METRIC UNITS

AUGUST 1989

State and Station	Elevation (ground)	Pressure		Temperature						Precipitation					Wind				No. of days (sunrise to sunset)	Sky cover, tenths (sunrise to sunset)	%								
		Station	Sea level	Average maximum		Average minimum		Departure from normal	Highest	Lowest	Date		No. of days	Average dew point	Average relative humidity	Total	Greatest in 24 hours	25 mm. or more				With thunderstorms	Total	Maximum depth on ground	Snow, ice pellets	Resultant speed	Resultant direction	Fastest mile (1.6 kilometers)	
				C	F	C	F				C	F																Max 32.2 °C or above	Min. 0 °C or lower
MAINE ISLANDS	14	1013.2	1015.7	28.1	17.9	25.0	1.7	35.0	27	12.8	18	7	0	16.7	71	51	-4.0	21	10	3	5	11	15	6-6	55				
SOUTH CAROLINA																													
CHARLESTON	17	1011.3	1018.0	33.2	22.4	27.8	1.9	37.2	21	17.8	27	21	0	22.2	75	19	-14.6	15	4	2	3	13	11	7	4-6	87			
CHARLESTON I.	17	28.3	28.2	1.1	36.1	21	20.0	26	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
COLUMBIA	65	1009.5	1017.4	33.4	24.0	26.9	2.2	38.0	1	14.4	26	22	0	20.0	72	84	-5.4	9	7	9	18	14	15	3	3-8	78			
GENEVILLE-FOOTNBURG	292	982.4	1017.4	32.4	19.4	26.3	1.1	36.7	9	15.0	26	21	0	18.9	71	85	-1.5	34	6	5	12	17	11	3	3-8	78			
SOUTH CAROLINA																													
ARDFORD	395	964.4	1010.8	27.3	13.7	20.5	-0.9	38.9	6	7.2	27	6	0	15.0	73	151	9.7	68	9	0	0	0	0	0	0	0	0		
HUPON	390	964.4	1010.8	28.1	14.6	21.4	-0.8	41.1	6	9.4	31	8	0	15.0	73	100	5.0	73	15	11	0	0	0	0	0	0	0		
DAVID CITY	964	903.2	1011.6	27.7	12.9	20.3	-1.7	37.2	6	7.2	5	6	0	9.4	54	60	2.7	15	0	8	0	0	0	0	0	0	0		
ST. LOUIS	437	961.7	1012.1	27.7	15.7	21.7	-0.4	35.6	7	10.0	5	6	0	14.4	67	74	7	17	14	11	0	0	0	0	0	0	0		
TENNESSEE																													
PRISTON	450	965.1	1018.6	31.9	17.9	24.9	1.5	36.7	10	14.4	26	13	0	18.9	76	65	-3.1	74	10	8	0	0	0	0	0	0	0		
CHATTANOOGA	207	992.4	1015.8	30.5	21.3	27.9	2.3	40.0	10	18.9	27	26	0	20.0	68	24	-5.7	17	9	12	0	0	0	0	0	0	0		
KNOXVILLE	299	982.7	1015.8	33.5	21.7	27.6	2.4	37.8	10	18.9	28	24	0	20.0	68	24	-5.7	17	9	12	0	0	0	0	0	0	0		
MEMPHIS	175	1009.4	1015.2	33.2	25.1	30.7	3.8	38.9	21	21.1	23	31	0	20.0	66	31	-2.5	33	5	0	0	0	0	0	0	0	0		
NASHVILLE	190	995.3	1015.7	34.1	21.2	27.6	1.8	37.8	21	17.8	22	26	0	20.0	68	31	-2.5	33	5	0	0	0	0	0	0	0	0		
OAK RIDGE	276	973.4	1015.7	33.4	18.6	26.1	1.6	37.8	8	15.6	28	23	0	20.0	68	53	-4.5	24	0	0	0	0	0	0	0	0	0		
TEXAS																													
ABELINE	544	951.2	1012.1	30.3	23.8	30.1	1.4	36.9	24	20.0	4	29	0	16.1	46	41	-1.1	21	3	3	0	0	0	0	0	0	0		
AMARILLO	1008	992.6	1010.8	33.2	18.4	25.8	0.5	37.2	5	14.4	28	22	0	12.8	49	46	-5.4	18	7	8	0	0	0	0	0	0	0		
AUSTIN	182	991.9	1015.3	33.2	28.2	30.0	0.7	38.9	22	21.7	26	30	0	20.0	61	30	-2.6	19	6	4	0	0	0	0	0	0	0		
BOONVILLE	6	1011.5	1015.2	33.3	25.4	28.4	0.3	36.7	2	21.7	27	27	0	20.0	61	185	18	129	7	3	0	0	0	0	0	0	0		
CORPUS CHRISTI	12	1011.5	1015.2	33.7	28.2	28.4	-1.1	36.1	1	21.7	1	33	0	23.3	76	376	29.4	17	7	0	0	0	0	0	0	0	0		
DALLAS - FORT WORTH	164	992.9	1015.4	33.6	24.9	30.4	2.0	36.6	23	20.0	29	30	0	17.8	47	52	2.1	33	4	3	0	0	0	0	0	0	0		
DEL RIO	313	981.1	1009.2	31.9	24.0	28.0	1.1	32.2	2	16.9	11	29	0	11.1	39	40	-5.0	33	4	3	0	0	0	0	0	0	0		
EL PASO	1199	981.1	1009.2	31.9	24.0	28.0	1.1	32.2	2	16.9	11	29	0	11.1	39	40	-5.0	33	4	3	0	0	0	0	0	0	0		
EL PASO	1199	981.1	1009.2	31.9	24.0	28.0	1.1	32.2	2	16.9	11	29	0	11.1	39	40	-5.0	33	4	3	0	0	0	0	0	0	0		
HOUSTON	29	1011.2	1016.9	31.1	26.5	32.0	0.5	35.9	23	21.1	28	29	0	22.8	70	40	-5.0	33	4	3	0	0	0	0	0	0	0		
HOUSTON INTERCON	992	1011.2	1016.9	31.1	26.5	32.0	0.5	35.9	23	21.1	28	29	0	22.8	70	40	-5.0	33	4	3	0	0	0	0	0	0	0		
LUBBOCK	869	915.0	1015.9	31.0	20.2	27.0	1.5	37.2	30	17.2	30	29	0	14.4	51	26	-4.2	12	6	7	0	0	0	0	0	0	0		
MIAMI	869	915.0	1015.9	31.0	20.2	27.0	1.5	37.2	30	17.2	30	29	0	14.4	51	26	-4.2	12	6	7	0	0	0	0	0	0	0		
PORT ARTHUR	580	1014.9	1015.9	31.7	20.3	29.0	0.0	37.8	22	18.9	27	29	0	23.3	75	84	4.7	61	7	3	0	0	0	0	0	0	0		
SAN ANGELO	580	947.5	1012.2	35.3	29.3	29.0	-0.1	38.3	2	21.7	20	29	0	17.8	54	84	4.7	61	7	3	0	0	0	0	0	0	0		
SAN ANTONIO	240	984.1	1014.6	34.8	24.4	28.6	0.3	36.9	2	20.0	26	30	0	22.8	70	67	6.9	69	7	7	0	0	0	0	0	0	0		
VICTORIA	332	1010.5	1014.6	33.9	24.0	28.6	-0.2	36.7	1	21.1	1	28	0	22.8	74	144	6.9	69	7	7	0	0	0	0	0	0	0		
WACO	153	996.0	1013.6	37.4	24.2	30.8	1.0	41.7	22	21.1	25	31	0	19.4	56	7	-3.8	3	3	3	0	0	0	0	0	0	0		
WICHITA FALLS	303	976.6	1011.9	38.9	24.2	31.6	1.8	42.2	24	20.0	29	31	0	16.7	45	7	-3.8	3	3	3	0	0	0	0	0	0	0		
UTAH																													
MILFORD	1533	845.2	1010.6	31.7	11.3	21.5	-1.1	37.2	11	3.9	20	14	0	5.6	36	15	-2	9	4	6	0	0	0	0	0	0	0		
SALT LAKE CITY	1287	869.3	1009.8	31.3	15.5	23.4	-0.2	37.2	12	8.9	20	19	0	5.6	36	7	-1.7	3	6	6	0	0	0	0	0	0	0		
VERMONT																													
BUPLINGTON	101	1003.4	1015.8	27.1	15.9	21.5	1.8	32.2	8	10.0	17	1	0	16.7	76	97	7	23	13	7	0	0	0	0	0	0	0		
VIRGINIA																													
LYNCHBURG	279	984.4	1013.6	32.6	19.0	25.9	2.3	36.7	8	14.4	27	22	0	18.9	65	115	-3.5	105	7	8	0	0	0	0	0	0	0		
NOFOLK	7	1115.0	1016.8	33.4	20.7	27.2	2.2	40.0	1	16.1	26	19	0	20.6	73	55	-4.4	47	6	0	0	0	0	0	0	0	0		
PICCON	50	1010.5	1016.8	33.4	20.7	27.2	2.2	40.0	1	16.1	26	19	0	20.6	73	55	-4.4	47	6	0	0	0	0	0	0	0	0		
ROANOKE	350	976.3	1017.6	31.2	16.6	24.9	1.3	35.6	11	15.0	27	18	0	18.3	71	72	-2.3	13	10	0	0	0	0	0	0	0	0		
WALLOPS ISLAND	3	28.5	20.2	24.3	0.5	35.6	1	15.6	17	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
WASHINGTON																													
OLYMPIA	50	1009.1	1016.5	23.7	9.9	16.8	-0.3	32.3	10	2.8	29	1	0	10.6	72	0	-2.1	7	4	1	0	0	0	0	0	0	0		
QUILLAYE	52	1010.2	1016.5	23.7	9.9	16.8	-0.3	32.3	10	2.8	29	1	0	10.6	72	0	-2.1	7	4	1	0	0	0	0	0	0	0		
SEATTLE	56	1010.2	1016.5	23.7	9.7	17.7	-1.2	25.0	10	8.9	29	0	0	10.6	72	51	-1.9	20	12	0	0	0	0	0	0	0	0		
SEATTLE U	16	21.4	13.2	17.3	-0.9	25.4	10	8.9	29	0	0	0	0	10.6	72	44	2.2	28	9	0	0	0	0	0	0	0	0		
WASHINGTON																													
SEATTLE U	16	21.4	13.2	17.3	-0.9	25.4	10	8.9	29	0	0	0	0	10.6	72	44	2.2	28	9	0	0	0	0	0	0	0	0	0	
WASHINGTON																													
SEATTLE U	16	21.4	13.2	17.3	-0.9	25.4	10	8.9	29	0	0	0	0	10.6	72	44	2.2	28	9	0	0	0	0	0	0	0	0	0	
WASHINGTON																													
SEATTLE U	16	21.4	13.2	17.3	-0.9	25.4	10	8.9	29	0	0	0	0	10.6	72	44	2.2	28	9	0	0	0	0	0	0	0	0	0	
WASHINGTON																													
SEATTLE U	16	21.4	13.2	17.3	-0.9	25.4	10	8.9	29	0	0	0	0	10.6	72	44	2.2	28	9	0	0	0	0	0	0	0	0	0	
WASHINGTON																													
SEATTLE U	16	21.4	13.2	17.3	-0.9	25.4	10	8.9	29	0	0	0	0	10.6	72	44	2.2	28	9	0	0	0	0	0	0	0	0	0	
WASHINGTON																													
SEATTLE U	16	21.4	13.2	17.3	-0.9	25.4	10	8.9	29	0	0	0	0	10.6	72	44	2.2	28	9	0	0	0	0	0	0	0	0	0	
WASHINGTON																													
SEATTLE U	16	21.4	13.2	17.3	-0.9	25.4	10	8.9	29	0	0	0	0	10.6	72	44	2.2	28	9	0	0	0	0	0	0	0	0	0	
WASHINGTON																													
SEATTLE U	16	21.4	13.2	17.3	-0.9	25.4	10	8.9	29	0	0	0	0	10.6	72	44	2.2	28	9	0	0	0	0	0	0	0	0	0	
WASHINGTON																													
SEATTLE U	16	21.4	13.2	17.3	-0.9	25.4	10	8.9	29	0	0	0	0	10.6	72	44	2.2	28	9	0	0	0	0	0	0	0	0	0	
WASHINGTON																													
SEATTLE U	16	21.4	13.2	17.3	-0.9	25.4	10	8.9	29	0	0	0	0</																

# CLIMATOLOGICAL DATA

METRIC UNITS

AUGUST 1980

State and Station	Elevation (ground)	Pressure		Temperature										Precipitation					Wind				No. of days (sunrise to sunset)			Possible sunshine %																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Lowest	Date	No. of days		Average relative humidity	Total	mm	Departure from normal	Greatest in 24 hours	No. of days		Snow, ice pellets	Resultant speed	Resultant direction	Speed (16 kilometers)	Direction	Date		Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
											Max 32.2 °C or above	Min. 0 °C or lower						25 mm or more	With thunderstorms											Total	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	

(Base 65°F.)

ALGUST 198C



## (1949) 10, 11.

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# STORM SUMMARY

August 1980

STATE	TORNADOES					HAILSTORMS				WINDSTORMS				LIGHTNING				@HEAVY SNOWSTORMS AND BLIZZARDS				# ICE STORMS				φ ALL OTHER			
	NUMBER	DAYS	DEATHS	INJURIES	† DAMAGE	DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE		DEATHS	INJURIES	†DAMAGE	
								PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS				
Alabama								4				5	3	1															
Alaska												6																	
Arizona												6																	
Arkansas												4																	
California												4																	
Colorado																													
Connecticut	3	3																											
Delaware																													
Florida				6								1																	
Georgia												1																	
Hawaii																													
Idaho																													
Illinois												2	6	5															
Indiana	1	1										6	6	2	2	5													
Iowa	3											6	6	3															
Kansas		1										4	7	6															
Kentucky												15	4	5															
Louisiana	1	1										5	5																
Maine													5																
Maryland & DC													3																
Massachusetts																													
Michigan	1	1										1	4																
Minnesota	1	1										6	6																
Mississippi																													
Missouri												2																	
Montana																													
Nebraska	3												6	5															
Nevada																													
New Hampshire	1	1											6																
New Jersey																													
New Mexico																													
New York																													
North Carolina	1	1										2	5																
North Dakota	3												7																
Ohio													4																
Oklahoma																													
Oregon																													
Pacific																													
Puerto Rico	1	1																											



## Average monthly values

AUGUST 1980

[illegible]

ATHENS, GA 989 MB					* BARRE, AK 1011 MB	BARTER ISLAND, AK 1011 MB					BETHEL, AK 1008 MB					* BISMARCK, ND 553 MB														
SFC	31	246	21.2	19.4	62	-7	23	8	-7	-1.0	20	18	31	15	3.5	2.4	25	18	31	39	9.5	7.0	24	1.8	31	503	13.8	11.1	02	1.1
1000							22	121	2.1	1.8	25	18	31	15	3.5	2.4	25	18	31	39	9.5	7.0	24	1.8	31	503	13.8	11.1	02	1.1
950	31	599	23.9	18.2	28	1.6	23	530	2.0	-4.2	27	3.4	31	520	5.0	1.3	24	1.2	27	124	10.0	6.5	24	1.5	21	552	14.1	10.9	36	1.1
900	31	1,072	21.9	15.3	29	1.6	23	966	1.1	-2.7	27	4.6	31	960	5.7	-1.7	26	4.7	31	977	4.9	1.0	19	3.1	31	986	15.7	9.0	23	0.7
850	31	1,566	18.6	12.5	29	1.5	23	1,426	1.0	-7.7	26	5.6	31	1,421	1.6	-3.4	25	8.7	31	1,841	2.2	-2.5	19	2.9	31	1,471	14.4	5.5	26	2.2
800	31	2,084	15.1	9.9	28	1.0	21	1,910	-1.8	-10.7	26	6.6	31	1,871	-1.0	-5.3	26	7.9	31	1,929	-1.1	-7.0	20	2.8	31	1,981	11.7	2.3	27	3.9
750	31	2,624	11.9	6.1	28	1.7	23	2,422	-4.8	-13.5	26	7.4	31	2,423	-3.9	-8.0	25	8.2	31	2,444	-2.6	-11.0	20	2.1	31	2,518	8.9	-9	26	5.7
700	31	3,204	8.6	4.6	27	2.1	23	2,963	-6.6	-15.2	26	7.8	31	2,965	-6.6	-12.3	25	8.7	31	2,989	-5.2	-15.2	21	2.4	31	3,086	5.4	-3.1	26	7.6
650	31	3,813	5.6	-3.9	27	2.1	23	3,539	-12.7	-16.5	25	7.8	31	3,541	-7.7	-16.4	25	8.7	31	3,568	-8.3	-19.5	21	2.8	31	3,689	1.6	-7.2	27	9.4
600	31	4,443	2.1	-9.1	27	1.5	23	4,155	-17.7	-20.7	25	8.1	31	4,163	-13.7	-19.9	25	9.6	31	4,185	-12.1	-23.1	21	3.4	31	4,320	-2.7	-11.6	27	13.1
550	31	5,158	-2.7	-14.6	28	1.1	23	4,814	-16.4	-24.0	26	8.4	31	4,817	-17.4	-25.6	25	9.6	31	4,845	-16.0	-27.7	22	3.4	31	5,014	-9.6	-16.6	26	14.2
500	31	5,957	-7.1	-22.3	27	1.3	23	5,524	-21.7	-25.1	26	10.0	31	5,526	-22.0	-30.9	25	10.4	31	5,557	-20.8	-33.1	22	3.6	31	5,715	-12.2	-21.9	26	15.6
450	31	6,722	-11.9	-26.2	27	1.4	22	6,294	-26.4	-36.1	26	10.1	31	6,286	-27.7	-35.6	25	11.3	31	6,328	-26.4	-38.6	22	4.2	30	6,549	-17.7	-29.0	26	18.1
400	31	7,613	-17.6	-32.2	30	1.8	22	7,134	-32.4	-40.7	26	10.7	31	7,122	-34.2	-42.6	26	11.3	31	7,168	-32.7	-44.0	22	5.2	30	7,420	-23.8	-35.2	26	20.3
350	31	8,602	-24.7	-38.6	30	1.9	22	8,063	-40.1	-45.6	26	11.9	31	8,045	-41.2	-46.7	26	11.7	31	8,098	-39.6	-46.3	23	6.4	30	8,388	-30.8	-41.1	26	21.9
300	31	9,702	-32.2	-45.1	30	2.2	22	9,093	-46.1	-49.5	26	12.3	31	9,073	-46.3	-49.5	26	11.7	31	9,133	-39.6	-46.3	23	7.8	29	9,458	-38.9	-47.1	26	24.8
250	31	10,956	-42.6		31	2.7	22	10,279	-52.7		26	11.4	31	10,259	-52.7		26	11.0	31	10,332	-49.1		24	10.9	29	10,685	-47.2		26	27.7
200	31	12,430	-56.2		32	2.6	22	11,737	-47.2		27	9.4	30	11,720	-48.2		26	9.7	31	11,803	-47.2		25	11.2	29	12,144	-51.8		26	29.9
150	31	13,200	-58.4		34	7.4	22	12,624	-46.0		26	6.3	30	12,603	-46.6		26	6.7	31	12,688	-47.0		27	10.1	29	13,006	-53.6		26	28.1
100	31	14,227	-63.8		38	9.4	22	13,650	-48.7		26	7.7	30	13,627	-48.7		26	5.4	31	13,707	-48.8		26	9.0	29	13,994	-54.8		26	25.9
125	31	15,745	-67.5		47	4.5	22	14,868	-44.1		28	5.8	30	14,837	-46.7		26	6.1	31	14,910	-48.2		26	8.0	29	15,056	-50.8		26	19.1
100	31	16,683	-68.4		05	3.2	22	16,348	-44.0		29	4.5	29	16,321	-46.4		26	5.0	31	16,379	-48.6		26	6.1	28	16,568	-57.4		26	11.4
80	31	18,031	-65.1		07	5.4	22	17,832	-46.0		29	3.4	29	17,804	-46.2		26	5.5	31	17,845	-48.9		26	4.8	26	17,979	-55.9		26	5.9
70	31	18,850	-62.6		07	6.3	20	18,729	-45.7		30	3.1	29	18,693	-46.0		27	3.4	31	18,723	-48.5		27	3.9	26	18,832	-54.8		25	4.4
60	31	19,809	-59.2		08	7.6	19	19,759	-59.2		31	2.3	29	19,719	-46.0		27	2.2	31	19,737	-48.6		27	3.5	26	19,822	-53.3		25	1.6
50	30	20,961	-56.6		08	8.4	19	20,973	-45.5		35	1.4	29	20,973	-45.8		26	1.0	31	20,937	-48.5		27	2.8	25	21,001	-52.2		14	3.3
40	30	22,396	-53.2		06	11.3	18	22,454	-45.4		35	1.5	29	22,440	-45.4		27	1.4	30	22,404	-48.0		28	1.6	25	22,450	-50.8		09	2.0
30	29	24,280	-49.3		05	12.1	16	24,360	-44.7		03	1.4	26	24,351	-44.5		09	1.1	30	24,307	-46.7		36	1.9	24	24,333	-48.4		09	4.4
20	29	25,462	-47.1		03	13.0	12	25,605	-44.7		03	1.5	26	25,576	-43.3		09	1.3	29	25,520	-46.9		05	1.1	25	25,537	-47.1		09	4.5
10	29	26,945	-45.7		05	13.7	7	27,086	-42.8		03	1.6	27	27,042	-42.8		09	1.2	27	27,000	-46.9		06	1.2	24	27,000	-48.0		09	4.6
15	28	28,857	-44.6		09	16.8					20	2.0	27	29,017	-40.2		08	2.0	25	29,956	-41.9		06	3.2	21	28,953	-42.8		08	4.5
10	23	31,607	-39.2		09	18.8					20	3.1	31	31,835	-35.7		08	3.6	20	31,765	-36.9		09	4.3	15	31,795	-38.1		09	8.6
7	9	34,069	-36.7								6	34	34,388	-32.0				34	34,108	-32.8			14	34	34,232	-33.6		09	8.1	
5																							9	36	36,542	-30.8				



Average monthly values

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DODGE CITY, KS 923 MB										EL PASO, TX 861 MB										ELY, NV 809 MB										EMPALME, MEXICO 1009 MB										FAIRBANKS, AK 996 MB									
SFC	31	791	21.7	16.5	17	2.9	31	1,193	21.9	13.4	26	1	31	1,908	10.2	22.1	20	3.6	31	12	27.2	23.6	07	7	30	135	10.2	7.2	29	1.2																			
1000	900																																																
950	31	1,008	23.6	13.8	20	7.7																																											
800	31	1,503	22.7	9.9	22	16.5	31	8,508	22.0	10.5	20	4																																					
750	31	2,034	19.7	7.3	23	9.8	31	2,033	19.0	7.6	22	1.0	31	2,006	15.4	1.3	19	3.3	31	2,041	17.9	10.5	04	1.7	30	1,942	1.7	3.0	25	5.1																			
600	31	2,536	15.9	4.7	27	8.9	31	2,585	15.5	5.5	19	1.4	31	2,555	15.5	-1.6	21	2.4	31	2,591	14.7	6.7	05	2.2	30	2,459	-1.7	-6.9	25	5.0																			
500	31	3,168	11.5	1.3	23	7.1	31	3,166	11.2	3.2	20	1.8	31	3,135	11.1	-4.9	24	3.4	31	3,171	10.8	3.7	06	2.5	30	3,005	-5.0	-12.8	24	5.0																			
400	31	3,783	6.6	-1.7	22	6.3	31	3,780	6.9	2	17	1.5	31	3,749	6.4	-7.1	24	6.2	31	3,786	4.9	-6.8	08	2.2	30	3,584	-8.6	-15.8	24	5.2																			
300	31	4,435	1.5	-6.3	22	6.1	31	4,433	2.3	-2.8	16	1.6	31	4,399	1.1	-9.4	24	8.6	31	4,440	2.8	-5.3	10	1.5	30	4,201	-12.3	-21.3	24	5.3																			
200	31	5,131	-2.6	-11.4	22	5.3	31	5,131	-2.7	-8.2	18	1.7	31	5,092	-1.4	-14.3	24	9.6	31	5,139	-1.2	-10.1	10	1.0	30	4,861	-4.0	-25.7	24	5.4																			
100	31	5,681	-7.2	-20.7	23	7.1	31	5,684	-6.6	-16.3	19	1.7	31	5,637	-9.4	-21.0	25	9.4	31	5,694	-5.3	-18.0	18	9	30	5,571	-21.3	-31.0	24	5.6																			
450	31	6,696	-11.6	-27.5	24	8.0	31	6,702	-10.7	-22.0	19	1.9	31	6,643	-14.5	-29.1	25	11.7	30	6,714	-10.2	-23.8	20	7	30	6,340	-26.9	-35.8	24	6.4																			
400	31	7,584	-17.8	-32.8	25	9.3	31	7,598	-16.6	-28.4	21	2.4	31	7,525	-21.0	-34.6	25	13.6	30	7,613	-15.5	-30.4	24	1.3	30	7,178	-33.4	-42.7	25	7.4																			
350	31	8,575	-24.9	-38.7	26	10.5	31	8,591	-23.3	-35.2	24	2.4	31	8,499	-28.5	-41.4	25	15.5	30	8,611	-22.3	-36.1	22	1.7	30	8,106	-40.2	-44.8	26	6.8																			
300	31	9,676	-32.8	-42.6	27	11.7	31	9,698	-31.7	-44.8	26	3.6	31	9,582	-36.5	-46.3	25	18.1	30	9,722	-30.6	-42.8	22	2	30	9,137	-47.8			6.4																			
250	31	10,934	-42.6	-46.8	26	13.7	31	10,963	-41.3	-52.4	27	4.4	31	10,823	-44.8		25	22.3	30	10,990	-41.0	-51.1	21	2.6	30	10,325	-52.8			8.1																			
200	31	12,475	-53.5		27	15.7	31	12,439	-53.4		27	5.3	31	12,288	-52.8		25	25.1	30	12,468	-53.2		21	3.4	30	11,773	-59.3			8.7																			
150	31	13,253	-58.9		27	16.7	31	13,266	-59.7		27	5.6	31	13,148	-56.6		25	24.1	30	13,316	-56.0		21	3.4	30	12,652	-60.0			8.2																			
150	31	14,207	-64.8		26	14.2	30	14,235	-66.4		26	5.3	31	14,112	-60.3		25	20.6	30	14,261	-66.7		24	2.7	30	13,670	-67.4			7.4																			
125	31	15,311	-67.5		27	10.1	30	15,327	-70.4		27	2.5	31	15,242	-62.6		26	15.2	30	15,348	-72.1		21	1.2	30	14,873	-48.1			27	6.6																		
100	31	16,656	-66.9		25	5.6	30	16,657	-70.0		02	1.1	30	16,613	-63.6		26	6.8	29	16,666	-71.5		08	8	30	16,343	-48.2			27	5.1																		
80	31	18,014	-63.7		21	1.7	30	17,987	-61.8		10	4	31	17,992	-61.4		25	2.6	27	17,997	-66.9		08	8	30	17,813	-48.2			27	4.6																		
70	31	18,874	-61.1		12	1.7	30	18,801	-63.8		09	6.6	29	18,825	-59.0		27	6	26	18,811	-64.0		09	10.5	30	18,694	-48.3			27	3.9																		
60	31	19,672	-58.9		09	2.9	30	19,754	-61.7		09	9.1	29	19,798	-56.9		08	1.4	25	19,760	-61.5		09	12.7	30	19,710	-48.0			27	3.2																		
50	31	20,954	-56.2		01	5.6	29	20,986	-58.0		09	11.0	28	20,958	-55.1		09	4	24	20,902	-58.0		09	14.1	28	20,909	-47.8			28	2.4																		
40	31	22,380	-53.7		05	8.2	30	22,312	-55.3		07	12.9	28	22,309	-53.4		09	7.6	22	22,318	-55.9		09	16.0	28	22,385	-47.2			29	1.4																		
30	31	24,247	-50.4		08	8.2	30	24,230	-49.8		09	15.2	26	24,260	-49.8		09	8.7	24	24,174	-51.0		09	18.7	28	24,247	-47.4			30	0.4																		
25	27	25,437	-48.9		09	9.1	30	25,353	-50.0		09	15.2	25	25,461	-46.4		09	9.8	23	25,365	-49.3		09	16.4	26	25,512	-45.4			30	0.4																		
20	26	26,912	-46.5		09	9.3	28	26,819	-47.1		08	16.3	23	26,940	-46.4		09	9.4	21	26,835	-45.8		09	18.2	26	27,004	-44.2			30	1.2																		
15	27	28,729	-44.2		09	10.4	27	28,733	-44.4		09	18.3	17	28,872	-44.4		09	10.6	10	28,788	-42.7		09	23	28,944	-41.7			30	3.1																			
10	26	31,574	-40.1		09	12.2	16	31,451	-40.6		09	19.4												17	31,679	-37.8			30	1.1																			

## Average monthly values

AUGUST 1946

[illegible]







## Average monthly values

8. 5. 7. 1. 4. 6. 0

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# RAWINSONDE DATA

Average monthly values

AUGUST 1980

SALEM, OR 101C MB										SALT LAKE CITY, UT 629 MB										SAN DIEGO, CA 997 MB										SAN JUAN, P. R. 1015 MB										SAULT STE MARIE, MI 989 MB									
Standard pressure surface mb		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind Direction tens of deg		Speed mps		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind Direction tens of deg		Speed mps		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind Direction tens of deg		Speed mps		No. of observations		Dynamic height meters		Temperature °C		Dew Point °C		Resultant Wind Direction tens of deg		Speed mps	
850	31	61	10.9	5.8	25	1.6	31	1.284	19.3	6.3	17	3.6	31	124	18.7	15.8	34	3	30	26.0	24.2	11	2.3	31	221	15.5	14.0	09	1.6	31	138	25.7	23.6	12	4.3	31	221	15.5	14.0	09	1.6	31	138	25.7	23.6	12	4.3		
1000	31	142	13.6	10.6	35	1.0	31	1.284	19.3	6.3	17	3.6	31	130	17.4	15.4	34	3	30	25.7	23.6	12	4.3	31	221	15.5	14.0	09	1.6	31	138	25.7	23.6	12	4.3	31	221	15.5	14.0	09	1.6	31	138	25.7	23.6	12	4.3		
950	31	575	12.9	9.2	01	3.0	31	1.284	19.3	6.3	17	3.6	31	541	18.6	11.8	19	2	30	25.0	20.9	12	8.0	31	559	16.6	13.1	21	1.5	31	590	23.0	20.9	12	8.0	31	559	16.6	13.1	21	1.5	31	590	23.0	20.9	12	8.0		
900	31	1,029	11.4	6.4	15	3.1	31	1.284	19.3	6.3	17	3.6	31	1,007	20.7	3.3	21	9	30	19.0	17.2	12	8.9	31	1,020	15.2	10.5	25	3.6	31	1,061	20.4	17.2	12	8.9	31	1,020	15.2	10.5	25	3.6	31	1,061	20.4	17.2	12	8.9		
850	31	1,507	10.5	5.3	34	3.1	31	1.462	20.9	4.7	17	4.4	31	1,501	20.9	-7.2	26	2	30	15.4	11.9	12	8.9	31	1,503	12.7	8.9	26	4.7	31	1,544	17.6	11.9	12	8.9	31	1,503	12.7	8.9	26	4.7	31	1,544	17.6	11.9	12	8.9		
800	31	2,010	8.9	-5.6	34	3.1	31	2,004	15.1	-2.3	22	5.2	31	2,023	18.8	-3.5	25	4	30	2,073	15.6	-6.1	12	8.6	31	2,010	10.3	1.0	26	6.6	31	2,073	15.6	-6.1	12	8.6	31	2,010	10.3	1.0	26	6.6	31	2,073	15.6	-6.1	12	8.6	
750	31	2,542	6.8	-9.6	32	3.1	31	2,535	11.7	-2.3	22	5.2	31	2,541	11.7	-3.9	24	4	30	2,617	12.9	-6.1	12	8.0	31	2,542	7.8	-1.7	27	7.7	31	2,617	12.9	-6.1	12	8.0	31	2,542	7.8	-1.7	27	7.7	31	2,617	12.9	-6.1	12	8.0	
700	31	3,106	4.2	-14.2	31	6.2	31	3,114	11.1	-5.4	25	5.7	31	3,154	11.6	-9.0	24	4	30	3,193	9.1	-3.3	13	6.8	31	3,106	3.1	-6.9	26	9.4	31	3,193	9.1	-3.3	13	6.8	31	3,106	3.1	-6.9	26	9.4	31	3,193	9.1	-3.3	13	6.8	
650	31	3,796	1.1	-16.6	30	7.3	31	3,745	6.8	-7.3	25	7.6	31	3,769	7.6	-11.2	24	7	30	3,803	5.3	-5.8	13	8.5	31	3,796	1.1	-8.6	26	11.2	31	3,803	5.3	-5.8	13	8.5	31	3,796	1.1	-8.6	26	11.2	31	3,803	5.3	-5.8	13	8.5	
600	31	4,438	-2.6	-20.5	29	8.1	31	4,394	1.6	-9.9	25	9.1	31	4,422	2.9	-14.2	23	3	30	4,453	2.0	-11.9	13	6.2	31	4,438	-2.1	-13.0	27	13.2	31	4,453	2.0	-11.9	13	6.2	31	4,438	-2.1	-13.0	27	13.2	31	4,453	2.0	-11.9	13	6.2	
550	31	5,138	-6.6	-24.6	29	8.1	31	5,095	-1.2	-11.7	25	10.7	31	5,121	-1.8	-17.8	22	4	30	5,151	-1.6	-15.7	12	5.2	31	5,138	-6.1	-17.7	27	13.2	31	5,151	-1.6	-15.7	12	5.2	31	5,138	-6.1	-17.7	27	13.2	31	5,151	-1.6	-15.7	12	5.2	
500	31	5,768	-11.1	-28.1	29	11.9	31	5,826	-10.4	-14.6	25	12.1	31	5,871	-7.0	-22.6	23	4	30	5,904	-6.2	-20.6	12	4.8	31	5,768	-10.8	-22.3	27	13.9	31	5,904	-6.2	-20.6	12	4.8	31	5,768	-10.8	-22.3	27	13.9	31	5,904	-6.2	-20.6	12	4.8	
450	31	6,567	-17.1	-32.7	26	13.8	31	6,632	-15.7	-27.2	26	13.8	31	6,686	-11.9	-29.0	24	5	30	6,720	-11.3	-25.8	11	4.0	31	6,567	-16.2	-28.7	27	16.0	31	6,720	-11.3	-25.8	11	4.0	31	6,567	-16.2	-28.7	27	16.0	31	6,720	-11.3	-25.8	11	4.0	
400	31	7,446	-23.1	-37.8	25	15.1	31	7,509	-21.4	-35.2	26	15.4	31	7,577	-17.9	-34.9	24	7	30	7,614	-17.3	-30.4	12	2.9	31	7,446	-22.0	-33.9	27	18.1	31	7,614	-17.3	-30.4	12	2.9	31	7,446	-22.0	-33.9	27	18.1	31	7,614	-17.3	-30.4	12	2.9	
350	31	8,404	-30.7	-44.0	20	17.6	31	8,462	-28.6	-42.9	25	16.5	31	8,565	-24.5	-41.5	24	8	30	8,604	-24.4	-37.2	11	2.4	31	8,404	-31.7	-40.6	27	21.2	31	8,604	-24.4	-37.2	11	2.4	31	8,404	-31.7	-40.6	27	21.2	31	8,604	-24.4	-37.2	11	2.4	
300	31	9,471	-39.7	-50.7	15	19.8	31	9,526	-36.9	-49.2	25	20.3	31	9,664	-33.3	-47.2	24	11	30	9,705	-33.1	-44.7	10	5	31	9,471	-39.7	-46.2	27	26.0	31	9,705	-33.1	-44.7	10	5	31	9,471	-39.7	-46.2	27	26.0	31	9,705	-33.1	-44.7	10	5	
250	31	10,705	-48.4	-59.4	10	21.4	31	10,803	-47.8	-57.0	25	24.9	31	10,921	-42.1	-54.2	24	14	30	10,960	-43.1	-51.9	9	1.3	31	10,705	-45.4	-28	32.5	5	31	10,921	-42.1	-54.2	24	14	30	10,705	-45.4	-28	32.5	5	31	10,921	-42.1	-54.2	24	14	
200	31	12,159	-53.4	-62.4	10	22.1	31	12,264	-52.0	-60.2	25	27.5	31	12,397	-42.4	-54.2	24	16	30	12,426	-54.9	-59.9	29	7	31	12,159	-53.1	-28	34.3	5	31	12,397	-42.4	-54.2	24	16	30	12,159	-53.1	-28	34.3	5	31	12,397	-42.4	-54.2	24	16	
150	31	13,016	-53.6	-62.4	10	21.0	31	13,119	-56.3	-61.3	25	26.7	31	13,249	-58.1	-61.3	24	15	30	13,268	-60.8	-60.8	32	1.4	31	13,016	-54.7	-28	28.9	5	31	13,249	-58.1	-61.3	24	15	30	13,016	-54.7	-28	28.9	5	31	13,249	-58.1	-61.3	24	15	
100	31	14,008	-54.9	-62.4	10	18.5	31	14,091	-57.2	-61.3	25	21.8	31	14,207	-63.8	-61.3	24	17	30	14,214	-66.1	-61.3	32	1.5	31	14,008	-56.4	-27	21.1	5	31	14,207	-63.8	-61.3	24	17	30	14,008	-56.4	-27	21.1	5	31	14,207	-63.8	-61.3	24	17	
50	31	15,164	-56.1	-62.4	10	15.1	31	15,217	-61.5	-61.3	26	15.4	31	15,313	-68.0	-61.3	24	17	30	15,306	-70.8	-61.3	32	1.6	31	15,164	-58.6	-27	15.3	5	31	15,313	-68.0	-61.3	24	17	30	15,164	-58.6	-27	15.3	5	31	15,313	-68.0	-61.3	24	17	
0	31	16,580	-57.6	-62.4	10	12.6	31	16,607	-62.3	-61.3	25	12.0	31	16,651	-67.7	-61.3	28	2	30	16,625	-72.5	-61.3	32	1.7	31	16,580	-61.1	-28	10.8	5	31	16,651	-67.7	-61.3	28	2	30	16,580	-61.1	-28	10.8	5	31	16,651	-67.7	-61.3	28	2	
	31	17,990	-57.4	-62.4	10	9.6	31	17,967	-60.8	-61.3	25	9.0	31	17,999	-65.6	-61.3	10	2	30	17,966	-69.4	-61.3	10	12.1	31	17,990	-56.9	-28	6.3	5	31	17,999	-65.6	-61.3	10	2	30	17,990	-56.9	-28	6.3	5	31	17,999	-65.6	-61.3	10	2	
	31	18,838	-55.2	-62.4	10	3.4	31	18,824	-58.1	-61.3	25	1.6	31	18,818	-62.8	-61.3	09	4	30	18,748	-66.8	-61.3	10	14	31	18,838	-55.8	-29	4.1	5	31	18,818	-62.8	-61.3	09	4	30	18,838	-55.8	-29	4.1	5	31	18,818	-62.8	-61.3	09	4	
	31	19,827	-54.7	-62.4	10	1.2	31	19,799	-56.4	-61.3	04	2	30	19,776	-59.6	-61.3	09	7	30	19,687	-63.8	-61.3	10	15.5	31	19,827	-54.3	-29	2.2	5	31	19,799	-56.4	-61.3	04	2	30	19,827	-54.3	-29	2.2	5	31	19,799	-56.4	-61.3	04	2	
	31	20,994	-53.0	-62.4	10	7	31	20,962	-54.7	-61.3	08	3	30	20,923	-57.4	-61.3	09	9	30	20,815	-60.2	-61.3	11	17.0	31	20,994	-52.7	-29	0.2	1	31	20,962	-54.7	-61.3	08	3	30	20,994	-52.7	-29	0.2	1	31	20,962	-54.7	-61.3	08	3	
	31	22,476	-51.1	-62.4	10	2	31	22,437	-52.5	-61.3	04	4	30	22,341	-54.6	-61.3	09	11	30	22,220	-56.3	-61.3	11	17.1	31	22,476	-51.0	-29	0.7	2	31	22,437	-52.5	-61.3	04	4	30	22,476	-51.0	-29	0.7	2	31	22,437	-52.5	-61.3	04	4	
	31	24,114	-49.2	-62.4	10	7	31	24,0																																									



## Average monthly values

AUGUST 1986

YAP, CAROLINE IS.  
1006



# SOLAR RADIATION INTENSITIES

Tabulated in langley's per minute on a surface normal to the direction of the sun.

August 1980

Palmer, Alaska										Tucson, Arizona									
Sun's zenith distance										Sun's zenith distance									
Date	A.M.				*	P.M.				Date	A.M.				*	P.M.			
	78 7°	75 7°	70 7°	60 0°		60 0°	70 7°	75 7°	78 7°		78 7°	75 7°	70 7°	60 0°		60 0°	70 7°	75 7°	78 7°
Palmer, Alaska, 1935, 1936, 1937										Tucson, Arizona									
Air mass										Air mass									
	4.64	3.71	2.78	1.86	*	1.86	2.78	3.71	4.64		4.64	3.71	2.78	1.86	*	1.86	2.78	3.71	4.64
1--	1.11	1.20	1.30	1.42	1.54	1.41	1.31	1.22	1.14	1--	.60	.71	.84	1.00	1.20	.96	1.02	.61	.51
2--	1.11	1.20	1.30	1.42	1.54	1.41	1.31	1.22	1.14	2--	.60	.71	.84	1.00	1.20	.96	1.02	.61	.51
3--	1.13	1.22	1.31	1.41	1.52	1.41	1.31	1.22	1.14	3--	.60	.71	.84	1.00	1.21	1.02	1.02	.61	.51
4--	1.12	1.20	1.29	1.40	1.51	1.41	1.31	1.22	1.14	4--	.65	.74	.86	1.04	1.27	1.07	.92	.80	.70
5--	1.12	1.21	1.30	1.41	1.52	1.41	1.31	1.22	1.14	5--	.65	.74	.86	1.04	1.25	.97	.88	.75	.64
6--	1.10	1.19	1.27	1.40	1.51	1.41	1.31	1.22	1.14	6--	.65	.74	.86	1.04	1.25	.97	.88	.75	.64
7--	1.09	1.18	1.27	1.39	1.54	1.41	1.31	1.22	1.14	7--	.61	.70	.85	1.02	1.24	1.04	.88	.75	.64
8--	1.12	1.21	1.30	1.42	1.52	1.41	1.31	1.22	1.14	8--	.61	.70	.85	1.02	1.24	1.04	.88	.75	.64
9--	1.15	1.22	1.31	1.44	1.52	1.41	1.31	1.22	1.14	9--	.76	.85	.93	1.14	1.33	1.13	.95	.85	.75
10--	1.14	1.21	1.30	1.41	1.52	1.36	1.25	1.16	1.08	10--	.76	.85	.93	1.14	1.33	1.13	.95	.85	.75
11--	1.13	1.21	1.30	1.40	1.55	1.40	1.30	1.20	1.14	11--	.75	.85	.99	1.15	1.36	1.20	1.07	.95	.86
12--	1.15	1.23	1.32	1.42	1.53	1.36	1.25	1.16	1.08	12--	.85	.96	1.07	1.21	1.39	1.18	1.05	.94	.84
13--	1.13	1.21	1.30	1.42	1.52	1.36	1.25	1.16	1.08	13--	.85	.96	1.07	1.21	1.39	1.18	1.05	.94	.84
14--	1.14	1.21	1.30	1.42	1.52	1.36	1.25	1.16	1.08	14--	.85	.96	1.07	1.21	1.39	1.18	1.05	.94	.84
15--	1.16	1.25	1.34	1.46	1.57	1.41	1.32	1.25	1.17	15--	.77	.88	1.00	1.17	1.34	1.09	.94	.88	.78
16--	1.17	1.25	1.34	1.46	1.54	1.36	1.26	1.17	1.09	16--	.77	.88	1.00	1.17	1.34	1.09	.94	.88	.78
17--	1.16	1.25	1.34	1.46	1.54	1.36	1.26	1.17	1.09	17--	.77	.88	1.00	1.17	1.34	1.09	.94	.88	.78
18--	1.16	1.25	1.34	1.46	1.54	1.36	1.26	1.17	1.09	18--	.77	.88	1.00	1.17	1.34	1.09	.94	.88	.78
19--	1.16	1.25	1.34	1.46	1.54	1.36	1.26	1.17	1.09	19--	.77	.88	1.00	1.17	1.34	1.09	.94	.88	.78
20--	1.16	1.25	1.34	1.46	1.54	1.36	1.26	1.17	1.09	20--	.77	.88	1.00	1.17	1.34	1.09	.94	.88	.78
21--	1.16	1.25	1.34	1.46	1.54	1.36	1.26	1.17	1.09	21--	.77	.88	1.00	1.17	1.34	1.09	.94	.88	.78
22--	1.16	1.25	1.34	1.46	1.54	1.36	1.26	1.17	1.09	22--	.77	.88	1.00	1.17	1.34	1.09	.94	.88	.78
23--	1.16	1.25	1.34	1.46	1.54	1.36	1.26	1.17	1.09	23--	.77	.88	1.00	1.17	1.34	1.09	.94	.88	.78
24--	1.16	1.25	1.34	1.46	1.54	1.36	1.26	1.17	1.09	24--	.77	.88	1.00	1.17	1.34	1.09	.94	.88	.78
25--	1.16	1.25	1.34	1.46	1.54	1.36	1.26	1.17	1.09	25--	.77	.88	1.00	1.17	1.34	1.09	.94	.88	.78
26--	1.16	1.25	1.34	1.46	1.54	1.36	1.26	1.17	1.09	26--	.77	.88	1.00	1.17	1.34	1.09	.94	.88	.78
27--	1.16	1.25	1.34	1.46	1.54	1.36	1.26	1.17	1.09	27--	.77	.88	1.00	1.17	1.34	1.09	.94	.88	.78
28--	1.16	1.25	1.34	1.46	1.54	1.36	1.26	1.17	1.09	28--	.77	.88	1.00	1.17	1.34	1.09	.94	.88	.78
29--	1.16	1.25	1.34	1.46	1.54	1.36	1.26	1.17	1.09	29--	.77	.88	1.00	1.17	1.34	1.09	.94	.88	.78
30--	1.16	1.25	1.34	1.46	1.54	1.36	1.26	1.17	1.09	30--	.77	.88	1.00	1.17	1.34	1.09	.94	.88	.78
31--	1.16	1.25	1.34	1.46	1.54	1.36	1.26	1.17	1.09	31--	.77	.88	1.00	1.17	1.34	1.09	.94	.88	.78
Avg.	1.14	1.22	1.31	1.42	1.54	1.38	1.27	1.19	1.11	Avg.	.72	.83	.94	1.09	1.30	1.11	.99	.84	.74

## NET RADIATION

Net radiation in langley's per day (8 a.m. to 8 a.m.) at Palmer, Alaska.

Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langley's	79	123	21	104	154	142	141	157	57	103	38	74	12	0	1.4	50	285	127	35	109	53	14	92	102	101	77	83	30	34	24	25	90

# REFERENCE NOTES

OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES: Dates in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observation).

- + And also on an earlier date or dates.
- D Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snowfall.

CLIMATOLOGICAL DATA - METRIC UNITS: Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

- B Number of days maximum 21.1°C. or above for Alaskan Stations.
- Y Peak Gust.
- + And also on an earlier date or dates.
- U Indicates Urban site.
- R Indicates Rural site.
- Ø Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

1 foot = 0.3048 meters  
 $^{\circ}\text{F.} = \frac{9}{5} \times ^{\circ}\text{C} + 32$   
 1 inch = 25.4 millimeters  
 1 mile per hour = 0.447 meters per second

HEATING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

COOLING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

## STORM SUMMARY:

- Ø Includes crop damage.
- C Crop damage.
- \* No occurrence of storms or unusual weather phenomena reported.
- @ Includes heavy sleet storm.
- # Freezing drizzle and freezing rain, commonly known as glaze.
- Ø For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.
- ‡ No Storm Data Report received for this State.
- < Report Incomplete.
- \* Storm damages are placed in categories varying from 1 to 9 as follows:
  - 1 Less than \$50
  - 2 \$50 to \$500
  - 3 \$500 to \$5,000
  - 4 \$5,000 to \$50,000
  - 5 \$50,000 to \$500,000
  - 6 \$500,000 to \$5 Million
  - 7 \$5 Million to \$50 Million
  - 8 \$50 Million to \$500 Million
  - 9 \$500 Million to \$5 Billion

## RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, G.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Dew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Dew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Dew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygrometers. These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

- \* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.
- + Observations for these stations are scheduled at 0000 G.C.T.
- † Dew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Dew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Dew Point temperatures replaced Relative Humidity January 1967.

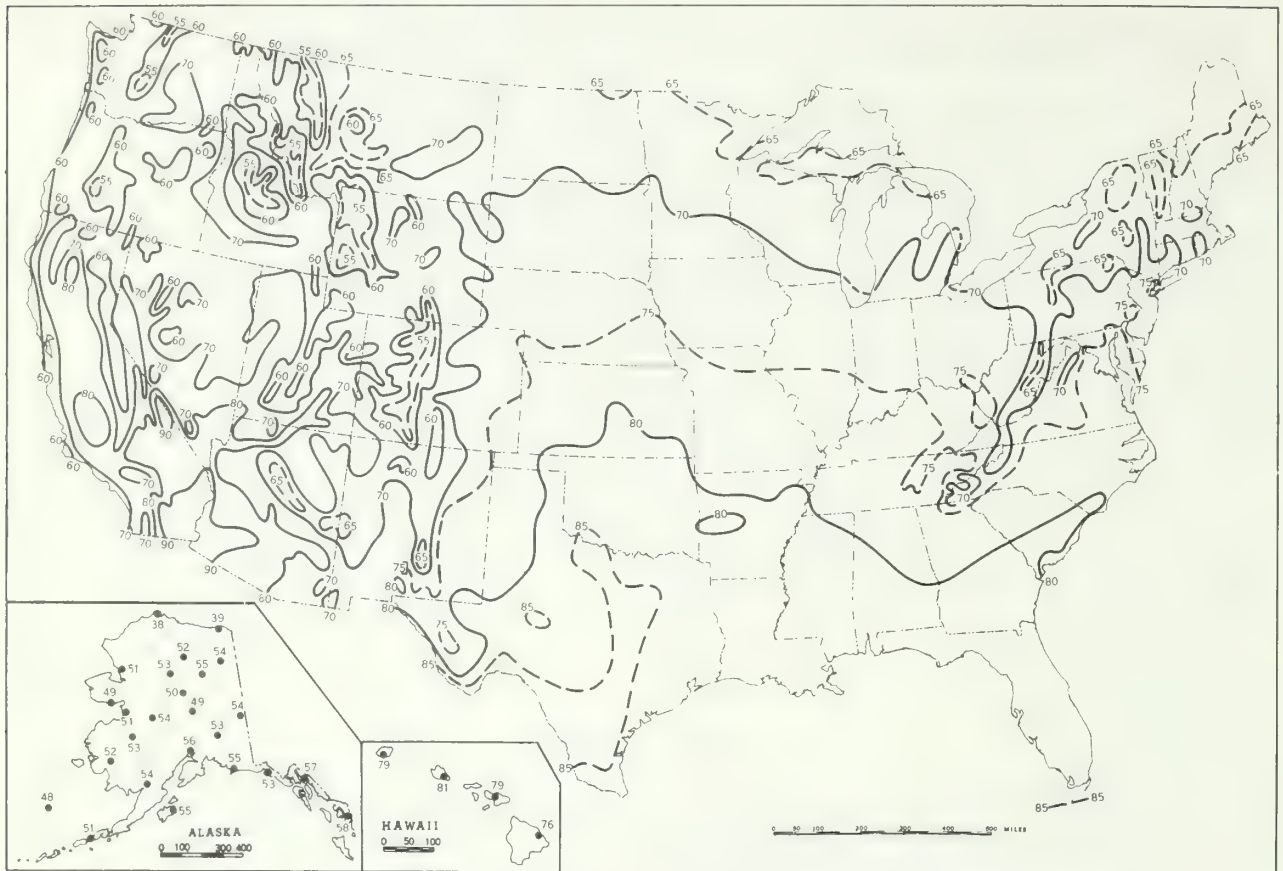
SOLAR RADIATION INTENSITIES: Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

( )	Clouds Present	DM	Moderate Dust	HM	Moderate Haze	KS	Slight Smoke
*	Values corresponding to true solar noon	DS	Slight Dust	MS	Slight Haze	M	Moderate Haze-indeterminable
BD	Blowing Dust	F	Fog	I	Intense Haze-indeterminable	N	Sand
BN	Blowing Sand	GF	Ground Fog	SI	Intense Smoke	S	Slight Haze-indeterminable
D	Dust	H	Haze	SM	Moderate Smoke		
DI	Intense Dust	HI	Intense Haze				

NET RADIATION: The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of sod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.

Chart 1. A. Normal Daily Average Temperature (°F. 1941-70), August.



B. Temperature Departure from 30 - Year Mean (°F 1941-70), August 1980

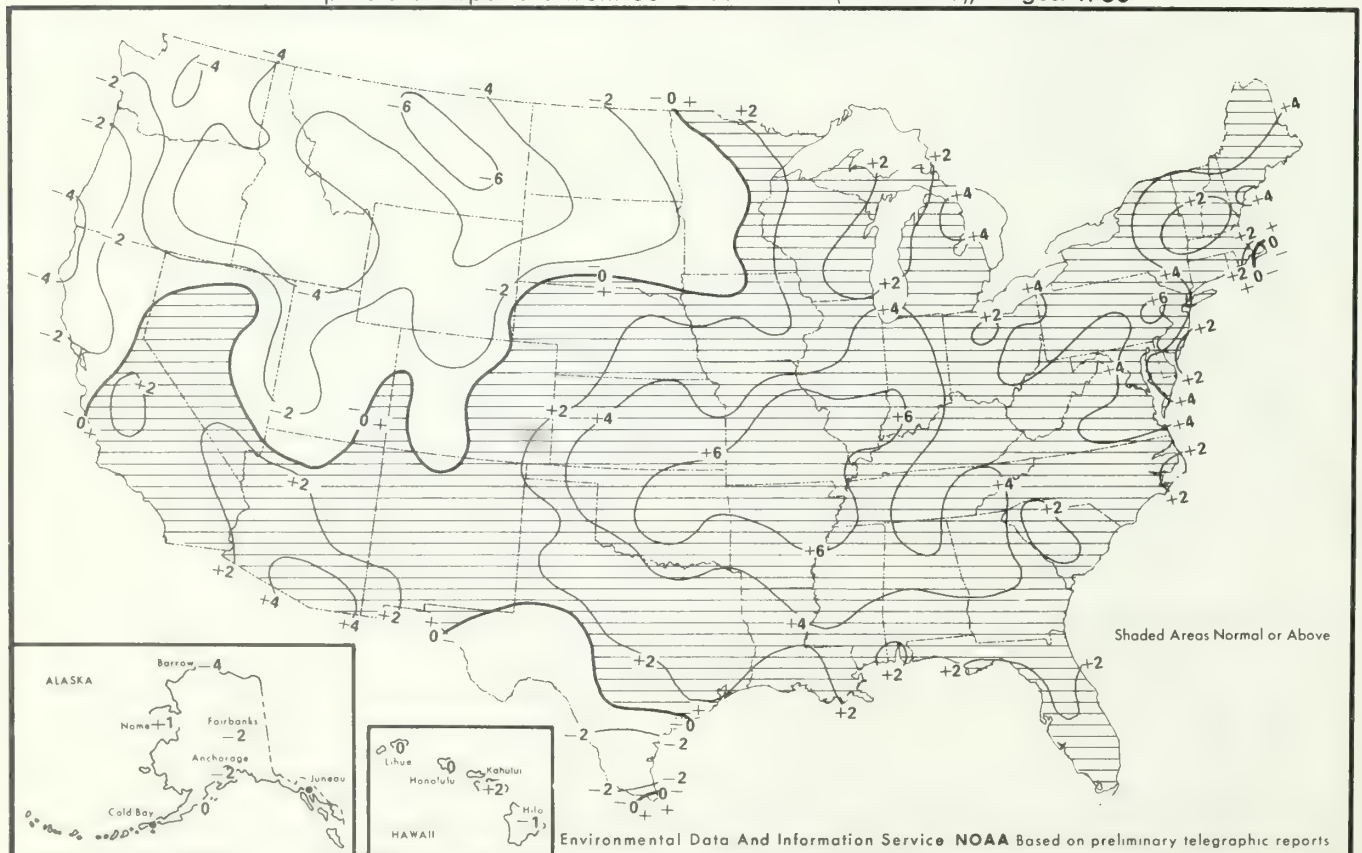
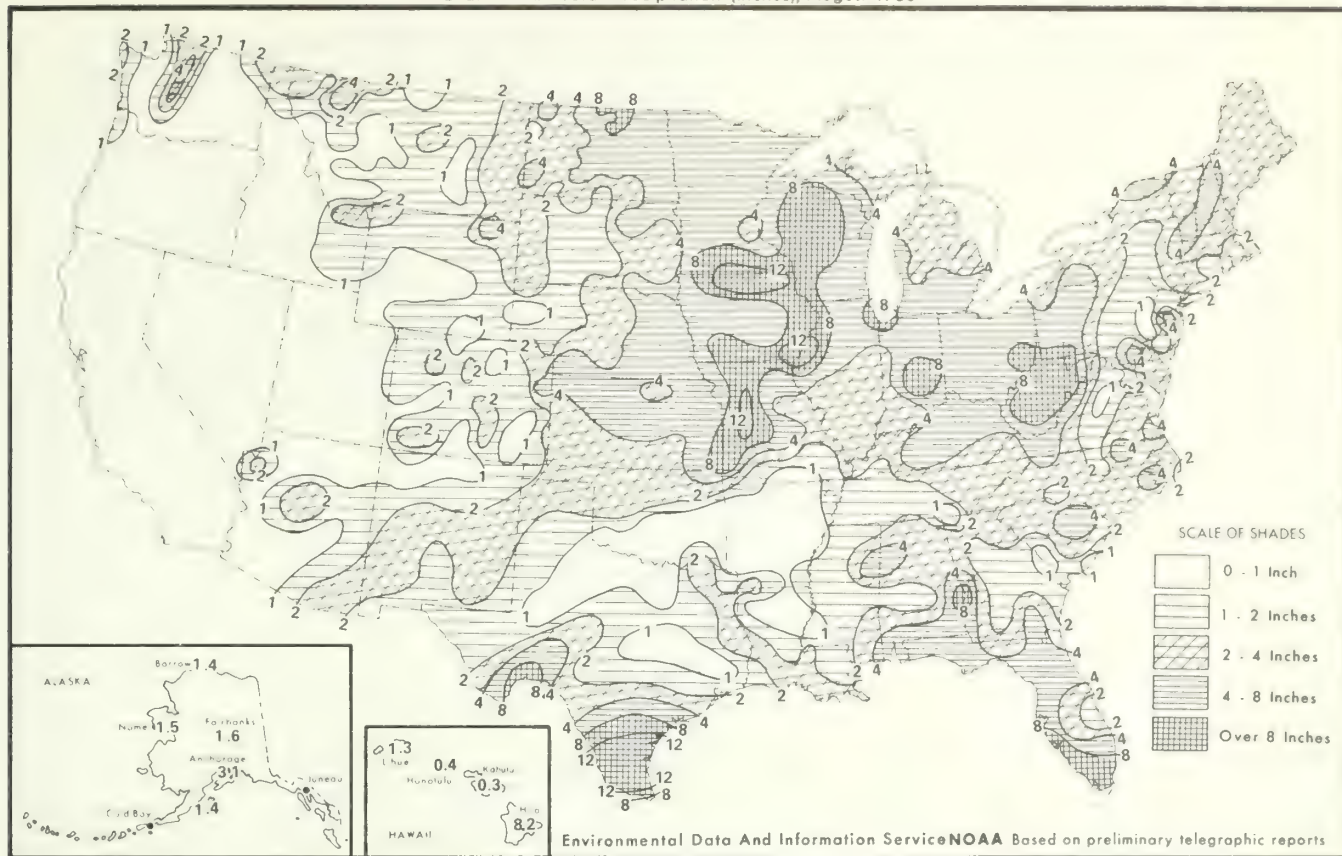




Chart II. A. Total Precipitation (Inches), August 1980



B. Percentage of Normal Precipitation, August 1980

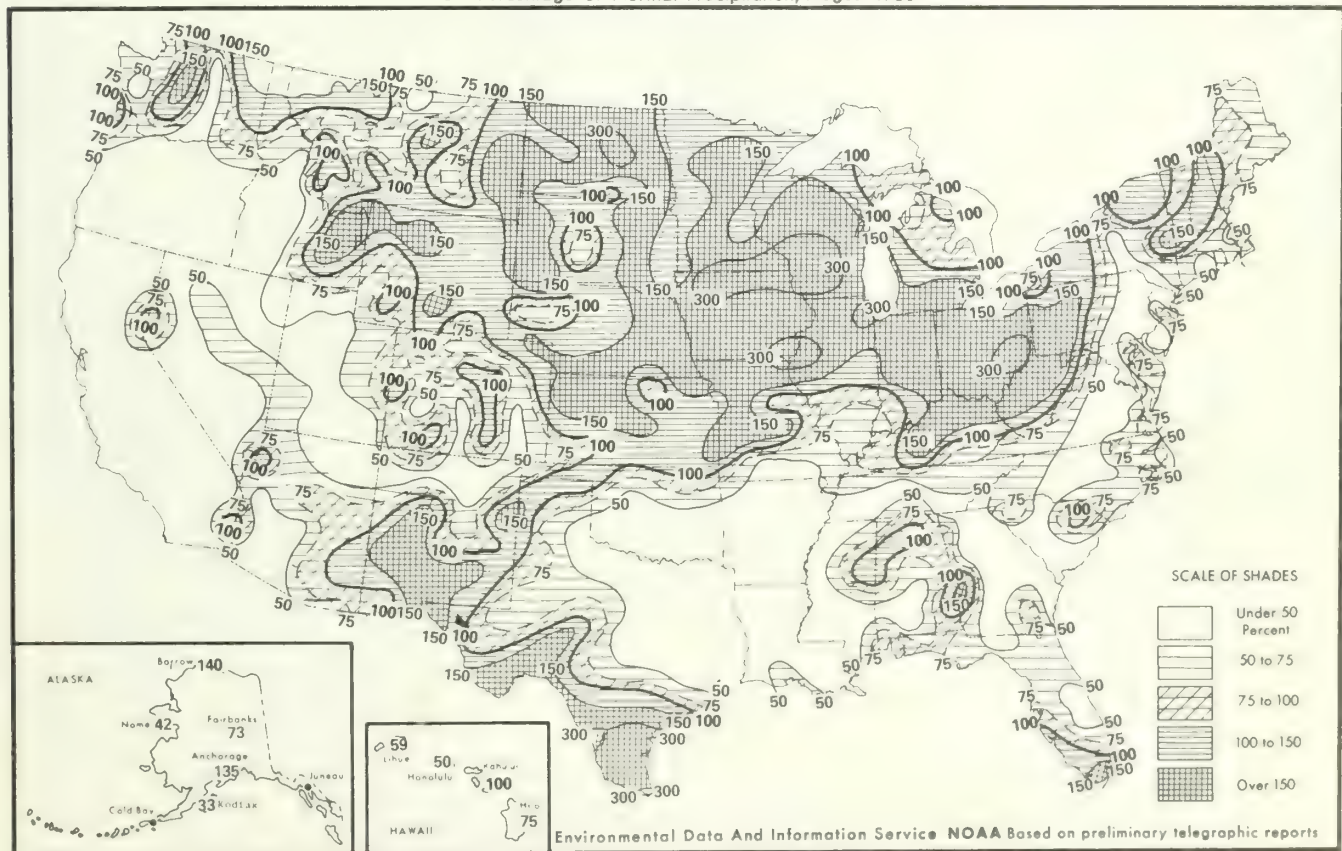
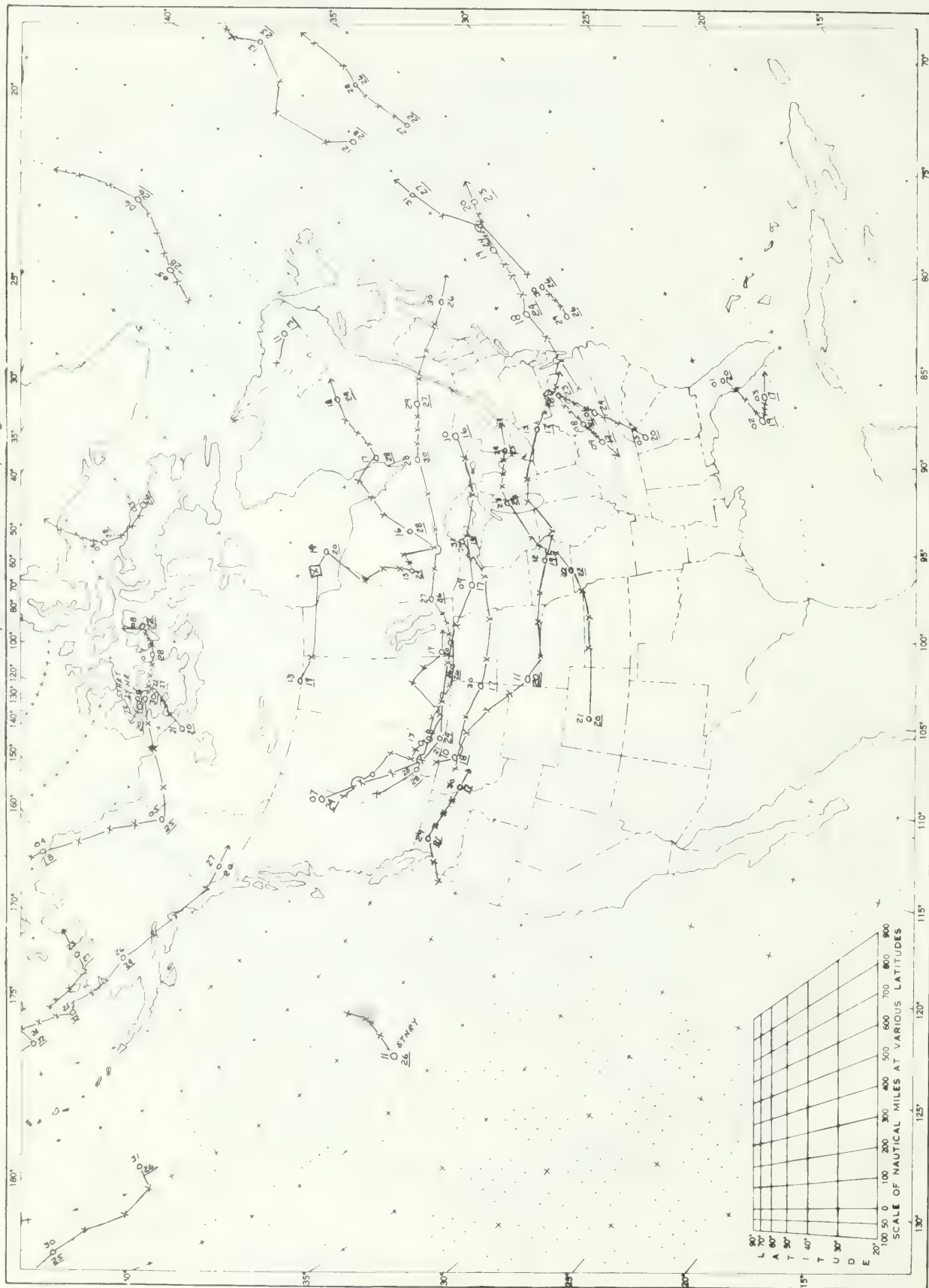


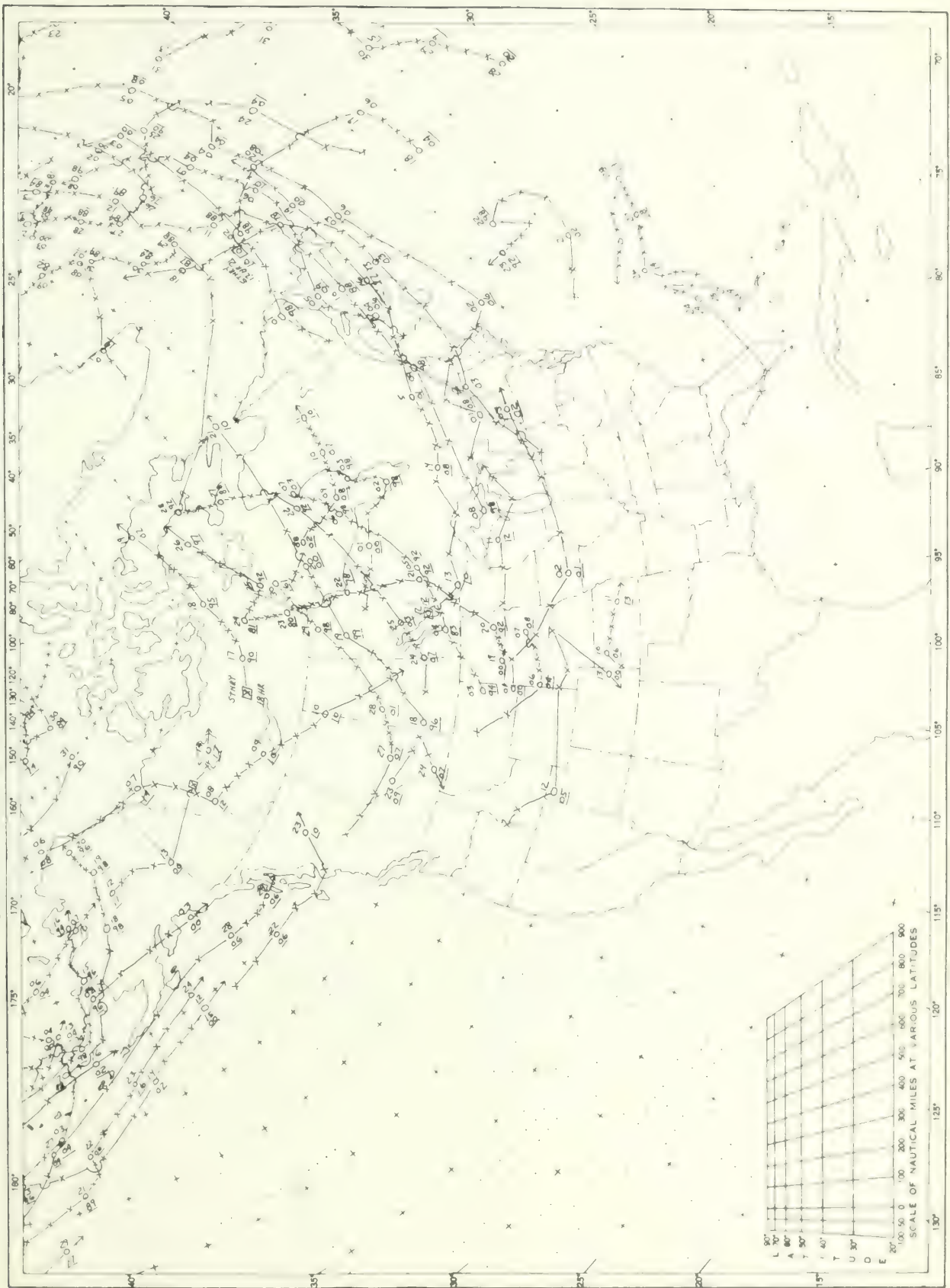
Chart III. Tracks of Centers of Anticyclones at Sea Level, August 1980



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar. X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.



Chart IV Tracks of Centers of Cyclones at Sea Level, August 1980



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date figure below, pressure to nearest millibar  
 'x's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track  
 indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included







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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



THIS PUBLICATION HAS BEEN FUNDED, PRIMARILY, THROUGH DIRECT APPROPRIATIONS FROM CONGRESS. BUDGET REDUCTIONS FOR FISCAL YEAR 1982 NECESSITATE ITS TERMINATION WITH THE 1980 ANNUAL ISSUE.

"I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AND IS COMPILED FROM INFORMATION RECEIVED AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA 28801."

*Daniel B. Mitchell*

DIRECTOR  
NATIONAL CLIMATIC CENTER

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NOTE: Late reports and corrections will be carried in the June and December issues of this publication. An explanatory page "Description of Charts" will be carried in the January and July issues.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

SEPTEMBER 1980

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist  
Environmental Data and Information Service, NOAA

**HIGHLIGHTS:** Excessively wet weather in the northern Corn Belt finally ended in the fourth week of the month and allowed the drying process to start. Tropical Storm Danielle spread torrential rains early in the month from southern Louisiana to western Texas. More than 10 inches flooded some areas in north central Texas. As the month progressed, incursions of cold air became more frequent and moved further south, displacing the hot, muggy air which had persisted throughout the summer. As cold air moved slowly through the South during the last 10 days of the month, torrents of heavy rain were unleashed from southwestern Texas to the Carolinas.

**FIRST WEEK:** As a high pressure system moved off the east coast, warm, moist air from the Gulf of Mexico flowed northward and intensified the heat wave from the central Plains eastward. A cold front, trailing southward into the Plains, first brought light showers to the northern Plains and then, as it encountered the moist air, triggered heavy showers and thunderstorms in the northern Mississippi Valley. More than 5 inches of rain deluged parts of Wisconsin. Late in the week, Tropical Storm Danielle formed in the Gulf of Mexico and spread heavy rain from southern Louisiana to the central Texas coast and inland to the Austin-San Antonio area.

**SECOND WEEK:** The cold front moved through the Great Lakes and New England touching off light showers east of the Lakes. Very warm air rapidly displaced the cool air in the northern Plains, and temperatures rose to 100° as far north as South Dakota. The remnants of Tropical Storm Danielle carried torrential rain to west central Texas and New Mexico. Downpours of more than 10 inches flooded parts of this normally dry area. The moisture was helpful

to some of the potential winter grain areas, but some crops were washed out. Elsewhere, another cold front moved through the northern Plains and on through New England. Showers were heavy from parts of North Dakota through Wisconsin. The persistently wet weather in Wisconsin began to cause disease in the previously healthy corn crop.

**THIRD WEEK:** Invasions of cool air moved into the northern Plains with great frequency as this first month of fall progressed. A new cold front pushed through the Plains to central Texas and significantly lowered temperatures behind it. The rain pattern was wide along and ahead of this front, and it wet most of eastern United States. Moderate rain again fell in Wisconsin and was substantial from Michigan to southeastern Texas. The heat wave held over most of the week from Oklahoma to Georgia and to the mid-Atlantic States.

**FOURTH WEEK:** A much cooler mass of air moved southward and eastward early in the week followed by still another surge at midweek. However, the rain was relatively light in the Great Lakes area, allowing Wisconsin to begin drying out. The determined cold air definitely brought autumn to the northern States, but the hot, muggy air of the South dug in for a final stand from southwestern Texas to the Carolinas. Torrents of rain resulted from this battle of cold against hot, but by the end of the week, the cold air was moving relentlessly southward.

The rain continued from Texas to the Carolinas through the end of the month on Tuesday but stopped by September's end. The cold air managed to push all the way to the Gulf Coast and northern Florida. The great heat wave of 1980, which began in mid-June, ended on the last day of the month.



# TROPICAL STORM DANIELLE

4-7 September 1980

National Hurricane Center, NOAA  
Miami, Florida

There is some evidence that a feature which contributed to the development of Danielle was tropical wave which emerged from the African coast on 22 August and briefly became a depression in the mid-Atlantic on the 27th. The surviving wave continued westward and interacted with a mid-tropospheric low over southern Florida on 2 September. The latter system had been producing disturbed weather over southern Florida and adjacent waters for two days prior to the arrival of the wave.

There were indications of a developing circulation over the north-central Gulf of Mexico on 3 September. Organizing continued, and a tropical depression formed on the following day, centered just off the southeastern Louisiana coast. A weak ridge of high pressure to the north kept the depression on a generally west northwestward track across the northern Gulf. Intensifying slowly, it became a tropical storm only hours before the center crossed the coast in the Galveston Bay area during the evening of the 5th. After moving inland, the storm took a more westerly track. It was downgraded to a depression on the morning of the 6th. Continuing westward, the low center could be tracked on synoptic charts to the Rio Grande Valley near Del Rio on the 7th. An area of rain, evidently associated with the remnants of the system, moved northwestward into western Texas during the next two days.

Conditions for tropical storm development in the northern Gulf of Mexico were less than ideal when the wave moved off Florida on the 2d. An east-west shear line at 200 mb had persisted for some time across the northern Gulf. However, as the depression formed on the 4th, an anticyclonic pattern at 200 mb began to develop over the surface system. The quick landfall of the storm precluded further strengthening.

The highest wind measured by reconnaissance aircraft was 40 kt at 1725 GMT on the 5th. However, an oil rig, EC42-B, located at 29.5N 92.8W, reported winds 52 kt gusting to 70 kt at 1500 GMT on the 5th.

The lowest reconnaissance pressure was 1006 mb at 1725 GMT on the 5th, but another oil rig, EC97-A, located 29.2N 92.8W reported 1004 mb about the same time.

The lowest pressure reported on land was 1008 mb at Galveston, and the highest wind gust was 38 kt, also at Galveston.

A post-storm report received for the Glomar Tender II asserted that the barge had encountered sustained winds of 50 kt with gusts to 80 kt at 28.9N 91.9W between 0600 and 1100 on the 5th. During this period there was only occasional light rain. Since these observations occurred before other information indicated that Danielle had reached storm intensity, it would seem that any such phenomena must have been on a small scale and not representative of the overall strength of the system.

No wind damage was reported on land. Tides were no more than 2 to 3 feet above normal on the southwest Louisiana and upper Texas coasts. Beach erosion was minor.

The main impact of Danielle was caused by its heavy rainfall. A 24-hour total of 17.16 inches at the Beaumont airport exceeded that station's previous 24-hour record. A 25 inch rainfall was reported near Junction, TX as the low pressure system was losing its identity at the surface.

There was major metropolitan flooding in the Beaumont-Port Arthur area of Texas requiring evacuation of some homes. Flash flooding occurred as the remnants of Danielle moved through the counties to the west and northwest of San Antonio, Texas. Interstate Highway 10 had to be closed, and some evacuation was carried out near Junction. Some boats and boat docks reportedly were washed out on Lake Buchanan in Llano County, Texas.

One fatality was caused directly by the storm when an automobile was driven past a barricade into 15 feet of water in the Beaumont area.

# TROPICAL STORM DANIELLE

## PRELIMINARY BEST TRACK

4-7 September 1980

<u>DATE</u>	<u>TIME (GMT)</u>	<u>POSITION</u>		<u>PRESSURE (MB)</u>	<u>WIND (KT)</u>	<u>STAGE</u>
		<u>LATITUDE</u> (°N)	<u>LONGITUDE</u> (°W)			
9/4	1800	28.3	90.6	1010	25	Tropical Depression
9/5	0000	28.3	91.3	1010	25	Tropical Depression
	0600	28.4	91.8		25	
	1200	28.8	92.4	1008	30	
	1800	29.4	93.4	1004	50	Tropical Storm
9/6	0000	29.4	94.9		40	
	0600	29.3	96.3	1008	35	
	1200	29.1	97.0		30	Tropical Depression
	1800	29.0	97.8		25	
9/7	0000	29.0	98.3	1010	20	
	0600	29.0	99.0			
	1200	29.0	100.0			

# HURRICANE EARL

4 - 10 September 1980

National Hurricane Center  
Miami, Florida

The low pressure system which was to become Hurricane Earl left the African coast near latitude 20°N between 2 and 3 September. Lower tropospheric winds at Dakar, Senegal, on the 3d at 12Z and the 4th at 00Z were from the south at 30 knots, indicating a rather strong disturbance. Satellite pictures indicated that the disturbance had acquired the characteristics of a tropical depression on the morning of the 4th, while just north of the Cape Verde Islands. The system showed an increase in convection during the afternoon of the 4th, but began to reverse this trend during the same evening. Because of these indications, the depression was not upgraded to a tropical storm in advisories until the 6th. However, post-analysis suggests that minimal tropical storm intensity was reached on the 4th, and this is reflected in the preliminary best track.

Earl turned to the north, accelerated, and strengthened on the 7th, as it approached an

upper level low pressure trough which had persisted in the central North Atlantic since mid-August. This trough also influenced Frances' track about one week later. Evidence of an eye appeared on satellite pictures on the 8th, and Earl was upgraded to a hurricane. Except for some fluctuations in speed and direction as the storm came under the influence of an upper cold low on the 7th and 8th, Earl gradually recurved and accelerated to the northeast, losing tropical characteristics late on the 10th. Little change in intensity occurred from the time Earl reached minimal hurricane strength until it became extratropical.

The highest winds reported by ships was 45 knots on the 8th. No damages or casualties have been reported. Earl never affected any land areas.

## PRELIMINARY BEST TRACK

DATE	TIME (GMT)	POSITION		PRESSURE (MB)	WIND (KT)	STAGE
		LATITUDE	LONGITUDE			
9/04	1200	17.7	24.0	1008	25	Tropical Depression
	1800	17.4	25.3	1006	30	
9/05	0000	17.8	26.7	1003	35	Tropical Storm
	0600	18.2	28.0	1000	40	
	1200	18.8	29.5		40	
	1800	19.2	31.0		40	
9/06	0000	19.7	32.0		40	
	0600	20.3	33.8		40	
	1200	21.0	35.5	998	45	
	1800	21.5	36.5		45	
9/07	0000	22.2	37.8		45	
	0600	23.2	38.8		45	
	1200	25.0	39.7		45	
	1800	27.0	40.3		50	
9/08	0000	29.0	41.2	992	60	Hurricane
	0600	30.4	42.5		65	
	1200	32.0	43.5	985	65	
	1800	33.3	44.1		65	
9/09	0000	34.7	44.3		65	
	0600	36.3	43.8	990	65	
	1200	38.0	43.1		65	
	1800	40.5	41.5		65	
9/10	0000	43.0	39.0		65	
	0600	45.2	36.0	995	65	
	1200	47.5	32.5		55	
	1800	49.5	28.5		55	
9/11	0000	51.5	23.5			Extra Tropical



# HURRICANE FRANCES

5-20 September 1980

National Hurricane Center  
Miami, Florida

The tenth tropical depression of the season moved westward off the northwest African Coast, south of Dakar, Senegal, on 5 September, already a strong low pressure system. It quickly developed into tropical storm Frances on the 6th and reached hurricane strength as it crossed the 25th Meridian the night of the 7th. During this century only a few other hurricanes have developed so close to the African coast.

The hurricane's forward speed of less than 10 knots from the 6th through the 12th was unusual for this section of the North Atlantic. During this 7 day period Frances first moved westward and gradually strengthened, reaching maximum intensity by the 9th with satellite data indicating sustained winds of 100 knots.

On the 10th the outflow pattern was partially disrupted as the hurricane approached an upper level low pressure trough. This caused a temporary weakening and turn toward the northwest. However, the slow motion of Frances and more rapid westward movement of the upper trough soon

allowed the outflow pattern to become reestablished on the 11th. Thereafter, maximum sustained winds continued between 80 and 90 knots until Frances began to lose tropical characteristics on the 19th.

Moving around the periphery of a large high pressure system centered south of the Azores Islands, Frances began to gradually recurve into higher latitudes after the 13th. Except for a cyclonic jog around a small upper level low pressure system between the 16th and 18th, the hurricane accelerated northeastward and merged with a large frontal low located midway between Ireland and Greenland on the 20th.

As the hurricane moved through the main shipping lanes in the mid-Atlantic a number of ships encountered winds in excess of 50 knots and a few reported hurricane force winds. No damage or casualties have been reported other than squalls in the Cape Verde Islands. Frances never affected any land areas.

# HURRICANE FRANCES

## PRELIMINARY BEST TRACK

5-20 September 1980

DATE	TIME (GMT)	POSITION		PRESSURE (MB)	WIND (KT)	STAGE
		LATITUDE (°N)	LONGITUDE (°W)			
9/6	0000	12.5	19.0	1010	25	Depression
	0600	12.5	20.0	1009	25	
	1200	12.6	21.0	1008	30	
	1800	12.7	21.8	1005	35	
9/7	0000	12.8	22.5	1002	40	Storm
	0600	12.9	23.2	998	45	
	1200	13.0	24.0	994	55	
	1800	13.0	24.8	990	60	
9/8	0000	13.0	25.6	986	65	Hurricane
	0600	13.0	26.8	978	70	
	1200	12.9	28.0	970	80	
	1800	12.8	29.0	965	90	
9/9	0000	12.8	29.8	960	100	
	0600	12.9	30.5		100	
	1200	13.0	31.3		100	
	1800	13.2	32.1	965	90	
9/10	0000	13.4	32.9		90	
	0600	13.8	33.5		90	
	1200	14.2	34.1	968	85	
	1800	14.9	34.6	970	80	
9/11	0000	15.4	34.9	968	85	
	0600	16.0	35.0	965	90	
	1200	16.3	35.3		90	
	1800	16.6	35.9	968	85	
9/12	0000	17.0	36.1	970	80	
	1600	17.2	36.9		80	
	1200	17.8	37.8		80	
	1800	18.3	38.5		80	
9/13	0000	18.6	39.6		80	
	0600	18.8	40.6	968	85	
	1200	18.9	42.0	965	90	
	1800	19.3	43.4		90	
9/14	0000	19.8	44.7		90	
	0600	20.2	45.9		90	
	1200	20.8	46.9		90	
	1800	21.6	48.0		90	
9/15	0000	22.5	48.8		90	
	0600	23.3	49.6		90	
	1200	24.6	50.2		90	
	1800	25.8	50.8		90	
9/16	0000	27.4	50.8		90	
	0600	28.8	50.6		90	
	1200	30.2	50.0		90	
	1800	31.8	49.2		90	
9/17	0000	33.0	48.0		90	
	0600	33.9	47.2	968	85	
	1200	34.7	46.4	970	80	
	1800	35.7	45.9		80	
9/18	0000	36.7	45.8		80	Hurricane
	0600	37.8	45.8		80	
	1200	39.0	46.2		80	
	1800	40.0	46.5		80	
9/19	0000	41.2	46.4	974	75	
	0600	42.4	45.8	978	70	
	1200	43.6	44.9	986	65	
	1800	44.5	43.2		65	
9/20	0000	45.7	41.0		65	Storm
	0600	47.0	39.0	990	60	
	1200	49.4	35.5	994	55	
	1800	51.2	32.0	998	50	
9/21	0000	54.0	29.0	1000	45	Extratropical

# HURRICANE GEORGES

31 August - 8 September 1980

National Hurricane Center  
Miami, Florida

According to records dating from 1885, Georges was only the third storm to initially reach hurricane intensity north of the 40th parallel. The other storms were Candice in 1976 and an unnamed hurricane in 1971.

The origin of Georges is somewhat unclear. A wave which moved off the coast of Africa on 28 August had developed a circulation by 0000 GMT, 01 September. This depression moved westward in the trade winds during the following three days. As it turned toward the northwest, passing northeast of the Leeward Islands on the 3d, an Air Force reconnaissance flight could find little evidence of a closed circulation, and satellite photos showed that the cloud pattern had become disorganized and elongated early on the 4th.

The residual area of disturbed weather moved northwestward during the next thirty hours and approached an upper tropospheric cold low to the west. Satellite photos suggest that a surface circulation formed in the northern part of the elongated cloud system during the morning of the 5th, possibly as a result of interaction with the cold low. However, the associated cloud pattern conformed more closely to the subtropical system of satellite classification than the tropical system.

Although the disturbance which spawned the new subtropical depression could be traced to the remnants of the tropical depression noted above, there seems to be little relationship between the

circulation center which dissipated on the 4th and the one which formed on the 5th. Therefore, the points on the accompanying track during the 'disturbance stage' merely represent an interpolated path of the "center of gravity" of the disturbed weather rather than an identifiable conservative circulation feature.

As the depression moved north northeastward and separated from the upper cold low which drifted to the southwest, it became better organized and slowly took on the appearance of a tropical cyclone. During the morning of the 6th, a NOAA reconnaissance flight found surface winds of 40 kts and a central pressure of 1008 mbs. However, the 40 kt winds were probably a transient feature at that time since a later Air Force flight the same day reported winds of less than gale force. By 0000 GMT, the 7th, the surface pressure dropped to 1004 mbs and the depression became a tropical storm. Twenty-four hours later reconnaissance and satellite data showed that Georges had become a hurricane as it accelerated northeastward. The center passed about 100 miles southeast of Cape Race, Newfoundland on the 8th, its closest approach to land, and the hurricane gradually lost tropical characteristics later in the day over the cold North Atlantic waters.

Georges was never more than a minimal hurricane, with maximum winds of 70 kts and a central pressure of 993 mbs at 0000 GMT, on the 8th. Georges spent its entire life at sea, and there are no known damage or casualties.



# HURRICANE GEORGES

## Preliminary Best Track

31 August - 8 September, 1980

DAY	HOUR (GMT)	LATITUDE	LONGITUDE	MINIMUM PRESSURE (mbs)	MAXIMUM WIND (kts)	CATEGORY
01	00	15.6	38.0	1010	30	Trop. Dep.
	06	15.9	39.4	1010	30	
	12	16.3	40.8	1010	30	
	18	16.8	42.1	1010	30	
02	00	17.3	43.7	1010	30	
	06	17.5	45.7	1010	30	
	12	17.7	48.1	1010	30	
	18	17.8	50.3	1010	30	
03	00	17.9	52.4	1010	30	
	06	18.0	54.5	1010	30	
	12	18.6	56.9	1010	30	
	18	19.7	59.0	1011	25	
04	00	21.0	61.0	1012	21	Trop. Disturbance
	06	22.1	62.3	1012	20	
	12	23.4	63.6	1013	20	
	18	24.8	64.8	1013	20	
05	00	26.1	65.8	1014	20	
	06	27.5	67.0	1014	20	
	12	28.5	68.6	1014	25	
	18	29.0	69.4	1013	30	
06	00	29.7	70.0	1013	30	w Subtropical Dep.
	06	30.6	70.0	1010	30	
	12	31.7	69.6	1008	30	
	18	32.9	69.1	1007	30	
07	00	34.4	67.9	1004	40	Trop. Storm
	06	35.9	65.9	1002	45	
	12	37.3	63.7	1000	50	
	18	38.6	61.5	997	55	
08	00	40.2	59.0	993	70	Hurricane
	06	42.9	55.1	993	70	
	12	45.6	51.1	993	68	
	18	48.0	46.9	993	65	

# TROPICAL STORM HERMINE

20-25 September 1980

National Hurricane Center  
Miami, Florida

The system that eventually developed into Tropical Storm Hermine moved off of the African coast as a tropical wave disturbance on 11 September. At the same time, Hurricane Frances was moving northwestward approximately 1000 n.mi. northwest of the wave position. Frances had come off the coast on the 5th with a vortex located near 13 degrees north latitude. The wave disturbance did not have a well-defined cloud circulation center at the coast, but the approximate center of cloud organization was near 08 degrees north latitude. This five degree latitude difference in point of origin at the coast was the central reason for the contrast in storm tracks. Frances moved northwest to north, reaching obscurity in the far North Atlantic, while the disturbance that later became Hermine maintained a westerly course across the tropical Atlantic, the Caribbean and the extreme southwest Gulf of Mexico.

The wave uneventfully moved westward across the Atlantic during the 12th through the 16th, but on the 17th, a few hundred miles east of the Lesser Antilles, the satellite-observed cloud features appeared to become better organized. There was low-level cloud banding, suggestive of a circulation center, and an increase in convection concentrated near this center. The system was moving at 15 to 20 kt and no closed circulation could be detected at the surface. An Air Force flight investigated on the afternoon of the 17th and reported a minimum surface pressure of 1013 mb and confirmed little evidence of a closed circulation.

The wave crossed the Lesser Antilles on the 17th and 18th. Island reports of surface pressures were in the 1010-1012 mb range and rainfall amounts were two inches or less.

The disturbance continued across the Caribbean, passing to the south of Jamaica on the 20th. At

this time, there was a decisive change in cloud structure with more concentrated convection and a better-defined low-level cloud circulation. Thus, tropical depression status was reached at 1200 GMT on the 20th. Intensification continued and minimal tropical storm intensity was attained at 0600 GMT on the 21st, when the center was located 80 n.mi. east of extreme eastern Honduras.

Hermine brushed by the northeast coast of Honduras and reached the coast of Belize at 1200 GMT on the 22d, just north of Belize City, which reported 999 mb and west winds gusting to 36 kt. Belize's radar signal indicated a poorly-defined center at this time. Also, just before landfall, an Air Force flight measured a minimum pressure of 995 mb, and maximum winds were estimated at 60 kt.

The storm crossed the Yucatan Peninsula and moved over the Bay of Campeche on the 23d. Some weakening occurred over land and maximum winds dropped to 45 kt. However, 60 kt. winds were reached again as Hermine strengthened over water. A reconnaissance measurement of 993 mb was made early on the 24th. These figures, 60 kt and 993 mb, represent Hermine's maximum intensity.

In the Bay of Campeche, Hermine's course changed from west northwest to southwest as its forward speed gradually decreased. Landfall occurred at 1200 GMT on the 24th, 90 n.mi. southeast of Vera Cruz. The storm drifted inland, became stationary, and finally dissipated over Mexico on the 26th.

There have been no exact figures of damages or casualties in connection with Hermine. However, there were news reports of severe fresh water flooding in southern Mexico and it is likely that flooding also occurred over portions of Honduras and Belize.

# TROPICAL STORM HERMINE

## PRELIMINARY BEST TRACK

20 - 25 September 1980

DATE	TIME (GMT)	LAT.	LONG.	PRESSURE (MB)	WIND (KT)	STAGE
09/20	1200	14.6	77.2	1008	25	Tropical depresssion
	1800	14.8	78.7	1007	25	
09/21	0000	15.0	80.2	1006	30	
	0600	15.1	81.6	1003	35	Tropical storm.
	1200	15.3	83.0	1000	40	
	1800	15.8	84.2	998	45	
09/22	0000	16.5	85.5	996	50	
	0600	17.1	86.7	995	55	
	1200	17.8	87.8	994	60	(Landfall
	1800	18.4	88.9	994	55	Yucatan Peninsula)
09/23	0000	18.8	90.2	995	50	
	0600	19.1	91.3	995	45	
	1200	19.3	92.6	995	50	
	1800	19.3	93.2	994	55	
09/24	0000	19.2	93.8	993	60	
	0600	18.8	94.4	993	60	(Landfall
	1200	18.5	94.8	994	55	Mexico)
	1800	18.1	95.1	997	50	
09/25	0000	17.7	95.5	1000	45	
	0600	17.3	95.8	1003	40	
	1200	17.0	96.0	1005	35	
	1800	17.0	96.0	1007	30	Tropical depression.
09/26	0000	17.0	96.0	1008	25	



## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

STATE	Temperature					Precipitation				
	Monthly extremes					Monthly extremes				
	Station	Highest °F	Date	Station	Lowest °F	Date	Station	Greatest In	Station	Least In
Alabama	Anniston	100	1	Valley Head	9	27	Saint Bernard	14.20	Tallapoosa Water Pit	1.0
Alaska	Barrow	112	13	Barrow	-58	23	Pelican	21.70		
Arizona	Prescott	112	10	Pleasant Valley R S	-27	22	Sunrise Mountain	5.17	6 Stations	
Arkansas	Mountain View	108	10	Sparkman	-40	27	Jefferson 3 WNW	14.48	Eureka Springs 3 WNW	
California	Mountain View	111	9	Mount Hebron R S	-4	1	Jess Valley	1.98	177 Stations	
Colorado	Alamosa	100	20	Alamosa	-20	28	Vallecito Dam	5.0	2 Stations	
Connecticut	Meriden	100	1	Coventry	-20	28	West Hartford	1.46	2 Stations	
Delaware	Wilmington	99	1	3 Stations	-20	28	Dover	7.48	Wilmington WSO AP	
District of Columbia	Washington	100	1	2 Stations	-20	19	Canal Point USDA	16.08	Kissimmee 2	
Florida	Claxton	100	1	Blairsville Ext Sta	-20	28	Cornelia	11.02	Sapelo Island	
Georgia	Atlanta	100	1	Atlanta 3 WNW	-20	28	Mount Waialeale 1047	26.52	10 Stations	
Hawaii	Honolulu	100	1	Grouse	-20	28	Penn Ranger Station	4.27	Malad City	
Idaho	Boise	100	1	Mount Carroll	-20	28	Logan	9.02	Salem	
Illinois	Chicago	100	1	Springfield 3 S	-20	28	Eastland	7.1	Brookville	
Indiana	Indianapolis	100	1	3 Stations	-20	28	Keokuk Lock and Dam 19	5.0	Logan	
Iowa	Norton 9 SSE	100	1	Cassoday	-20	28	Troy 3 SW	4.4	10 Stations	
Kansas	Wichita	100	1	3 Stations	-20	28	Murray	9.50	Greensburg Hwyay 61	
Kentucky	2 Stations	100	1	Madison 3 WNW	-20	28	Donaldsonville	10.46	Grand Ecore	
Louisiana	Shreveport	100	1	Clayton Lake 2	-20	28	Grand Lake 2 WNW	6.76	West Buxton 2 NWN	
Maine	Portland	100	1	Portland 3 W	-20	28	Cambridge Wtr Trmt Pl	6.23	Laurel 3 W	
Maryland	Chester 2	100	1	Chester 2	-20	28	Lanesboro	3.77	10 Stations	
Massachusetts	Worcester	100	1	2 Stations	-20	28	De Tour Village	8.67	Brown Village	
Michigan	Ann Arbor	100	1	Tower 3 S	-20	28	Browns Valley	10.38	Rolling Fork	
Minnesota	St. Paul	100	1	Houston 2 NE	-20	28	Pascagoula 2 ENE	8.8	Dora	
Mississippi	Meridian	100	1	Maryville 2 E	-20	28	Gregory Landing	9.28	Knobs	
Missouri	St. Louis	100	1	St. Louis	-20	28	Enders Lake	4.01	Paxton 2 W	
Montana	Butte	100	1	Agate 3 E	-20	28	Lebanon Caves Nat Mon	3.48	Pahrump U of N Lab	
Nebraska	Lincoln	100	1	2 Stations	-20	28	Mount Washington	9.96	Milford	
Nevada	Las Vegas	100	1	Mount Washington	-20	28	Princeton Water Work	4.0	Wanaque Raymond Dam	
New Hampshire	3 Stations	100	1	3 Stations	-20	28	Carlsbad	12.27	White Signal	
New Jersey	NY Westerleigh Stat	100	1	Lake Placid 2 S	-20	28	Bridgehampton	9.27	Bridgehampton	
New Mexico	Jackson	100	1	Banner Elk	-20	28	Southport 5 N	11.26	Roxboro	
New York	Williston WSO AP	100	1	La Moure 2 W	-20	28	Belcourt Keya	5.32	Verona	
North Carolina	2 Stations	100	1	Plymouth 2 WSW	-20	28	Chambers Lake	5.0	Sayre	
North Dakota	Antlers	100	1	4 Stations	-20	28	Carter Tower	14.73	10 Stations	
Ohio	Indianapolis	100	1	Brothers	-20	28	Delaware 9 N	5.06	Cave Junction 1 WNW	
Oklahoma	2 Stations	100	1	2 Stations	-20	28	Erie WSO AP	5.48	Saxton	
Oregon	1 Station	100	1	Cayey 1 E	-20	28	Jayuya 1 SE	38.85	Santa Isabel 2 ENE	
Pennsylvania	Philadelphia	100	1	Philadelphia	-20	28	Kingston	.92	Newport	
Rhode Island	Darlington	100	1	Columbia Univ of SC	-20	28	Anderson FAA AP	11.73	Hilton Head	
South Carolina	Gregory	100	1	Gregory	-20	28	Violet 1 ESE	3.95	2 Stations	
South Dakota	Memphis WSO	100	1	Laurens	-20	28	Laurens 1 W	7.50	Lebanon 7 N-Hunters P	
Tennessee	Boquillas Ranger Sta	100	1	Laurens	-20	28	Laurens Rock	24.66	Perryton 11 WNW	
Texas	Church Wells	100	1	Woodruff	-20	28	Laurens	4.14	Wendover Autob	
Utah	Vernon	100	1	Northfield 3 SSE	-20	28	Mount Mansfield	9.01	Bellows Falls	
Vermont	3 Stations	100	1	3 Stations	-20	28	Marion Evap Station	4.82	Randolph 5 NNE	
Virginia	2 Stations	100	1	Alton Hatter and ELL	-20	28	Haw Bluff L H Sta	8.22	Tague Bay	
Washington	2 Stations	100	1	Clenwood 2	-20	28	Laurens	10.02	Glenwood 2	
West Virginia	Marionville 3 W	100	1	Franklin 2 NE	-20	28	Laurens	5.06	East Rainelle 3 NNE	
Wisconsin	Prairie Du Chic	100	1	2 Stations	-20	28	Laurens	10.02	10 Stations	
Wyoming	Colony	100	1	Colony 3 S	-20	28	Wapiti 5 WSW	4.39	4 Stations	

## SEPTEMBER 1980

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## METRIC UNITS

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[illegible]



## CLIMATOLOGICAL DATA

METRIC UNITS

SEPTEMBER 1980

State and Station	Pressure			Temperature						Precipitation					Wind				No. of days (sunrise to sunset)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
	Elevation (ground)	Station	Sea level	Average maximum			Average minimum			Departure from normal	Highest	Date	Lowest	No. of days		Average relative humidity	mm	mm	Departure from normal	Greatest in 24 hours	No. of days		Resultant speed	Resultant direction	Fastest mile (1.6 kilometers)		Direction	Date	Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10	Sky cover, tenths (sunrise to sunset)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
				Average maximum			Average minimum							Max 32 °C or above	Min, 0 °C or lower						With thunderstorms	Maximum depth on ground			mm	mm							mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm</

## SEPTEMBER 1980

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## SFOTFMBER 1980

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# CLIMATOLOGICAL DATA

METRIC UNITS

SEPTEMBER 1955

State and Station	Pressure		Temperature										Precipitation				Wind				No. of days (sunrise to sunset)		Possible sunshine (sunrise to sunset)	%				
	Elevation (ground)	Station Q	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max 32.2° or above	Min 0° or lower	No. of days	Total	Snow, ice pellets	Maximum depth on ground	Resultant speed	Resultant direction	Speed (1.6 kilometers)	Direction	Date			Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10	
WASHINGTON CENTIFUGOVA WASHAF STAMPEET PASS P WALLA WALLA U YALIPA	1227	1000.3	1016.7	19.7	11.0	15.3	0.0	26.1	5	8.9	24*	0	0	10.6	77	0	0	0	0.7	22	7.6	S 19*	5	6	19	7.3	40	
	718	931.6	1014.4	21.9	7.4	16.7	-3.7	28.3	6*	1.7	24*	0	0	6.7	64	0	0	0	1.9	20	11.6	SW 2	6	16	8	6.0	67	
	1206	880.5	1014.4	18.4	6.9	10.7	-0.1	22.9	5	2.8	22*	0	0	4.5	63	0	0	0	0	19	10.7	SW 2	7	10	12	6	5.1	66
	289	976.6	1014.8	25.4	12.2	18.8	0.1	31.3	6*	3.7	22*	2	0	7.2	57	0	0	0	1.3	28	12.5	19 19	12	9	9	4.9	66	
	321	976.6	1014.8	25.8	8.2	17.0	0.7	31.7	6	2.2	21	0	0	7.2	57	0	0	0	1.3	28	12.5	19 19	12	9	9	4.9	66	
WEST INDIES SAN JUAN P.R.	4	1012.2	1014.4	32.7	25.6	29.2	1.9	33.9	18*	24.4	23	26	0	24.4	80	0	0	0	2.1	12	11.2	E 18	6	17	7	5.6	59	
	4	1012.2	1014.4	32.7	25.6	29.2	1.9	33.9	18*	24.4	23	26	0	24.4	80	0	0	0	2.1	12	11.2	E 18	6	17	7	5.6	59	
WEST VIRGINIA BECKLEY CHARLESTON ELIAS HUNTINGTON FARMERSBUR, J	763	931.9	1018.9	23.9	13.4	18.7	1.6	26.3	14*	2.8	27	0	0	13.9	78	0	0	0	0.8	20	8.9	14 16	2	9	19	7.5	66	
	310	984.4	1019.2	26.6	15.3	21.0	1.3	31.7	14*	7.2	28*	0	0	17.2	82	0	0	0	0.5	24	13.0	31 2	4	16	10	6.4	7.5	
	594	949.9	1019.2	24.4	11.8	18.1	1.7	29.9	2*	3.3	27	0	0	17.2	82	0	0	0	0.4	16	7.6	22 22	4	7	20	7.6	6.3	
	282	988.5	1018.2	26.8	16.2	21.5	1.7	32.8	14	7.8	27	5	0	17.2	82	0	0	0	0.4	16	7.6	22 22	4	7	19	7.5	6.3	
	187	988.5	1018.2	26.7	14.4	20.6	0.9	32.2	4*	5.6	27	2	0	17.2	82	0	0	0	0.4	16	7.6	22 22	4	7	19	7.5	6.3	
WISCONSIN GREEN BAY LA CROSSE MADISON MILWAUKEE	204	990.5	1016.1	20.4	6.6	15.1	0.1	28.3	7	1.1	26	0	0	11.1	60	0	0	0	1.2	24	15.2	SW 21	4	12	14	6.9	66	
	198	991.9	1016.4	23.1	12.1	17.6	1.1	32.3	8	3.9	17	1	0	13.4	81	0	0	0	0.6	18	15.2	SW 21	4	12	14	6.9	66	
	282	985.4	1016.7	21.4	9.5	15.5	0.1	30.6	8	-0.6	26	0	1	12.2	82	0	0	0	0.9	22	11.6	SW 20	6	10	15	6.5	52	
	205	991.2	1016.5	21.1	11.2	16.2	0.0	27.2	13	3.9	26	0	0	11.1	74	0	0	0	1.4	24	23.2	SW 9	6	12	12	6.1	42	
WYOMING CASPER CHEYENNE LAUDER SHERIDAN	1627	839.1	1014.9	25.1	5.6	15.4	0.6	22.8	6	-2.8	25	1	2	0.6	44	0	0	0	2.5	25	15.6	31 28*	11	1	9	5.1	70	
	1867	814.4	1014.7	24.3	7.2	15.8	1.2	31.1	5	1.1	25	0	0	2.2	46	0	0	0	2.7	27	22.8	SW 28	15	11	4	3.9	70	
	1666	830.7	1014.2	24.3	6.7	15.5	0.8	31.1	6	0.0	25*	0	2	0.0	39	0	0	0	1.5	26	22.8	SW 28	15	11	4	3.9	70	
	1208	879.4	1015.4	24.3	5.4	14.9	0.5	35.0	6	0.0	16	2	1	2.4	51	0	0	0	3.9	29	15.6	SW 28	10	11	9	5.2	70	

# HEATING DEGREE DAYS

(Base 65°F.)

State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month
	This month	Period July through this month			This month	Period July through this month			This month	Period July through this month			This month	Period July through this month	
ALABAMA				IDAHO				NEBRASKA				TENNESSEE			
BIRMINGHAM U	9	9	0	BOISE	104	145	139	GRAND ISLAND	71	71	113	BRISTOL	11	31	
BIRMINGHAM	7	7	6	LEWISTON	74	109	141	LINCOLN	81	84	87	CHATTANOOGA	24	24	
HUNTSVILLE	12	12	11	POCATELLO	142	244	212	NEO-FOLK	100	101	140	KNOXVILLE	23	23	
MOBILE	0	0	0					NORTH PLATTE	187	113	158	MEMPHIS	4	4	
MONTGOMERY	3	3	0	ILLINOIS				OMAHA (NEB.)	108	111	74	NASHVILLE	4	4	
				CAIRO U	14	14	11	OMAHA (NORTH)	67	70	114	RAY CITY	21	21	
ALASKA				CHICAGO O HARE	71	74	114	SCOTT'S BLUFF	61	62	168				
ANCHORAGE	542	1105	1009	WOLINE	77	78	90	VALENTINE	112	126	170	TEXAS			
ANNETTE	337	801	772	PEORIA	65	65	78					ABILENE	16	16	
BARROW	1191	3054	2705	ROCKFORD	99	102	121	NEW YORK	119	143	335	AMARILLO	35	35	
BARTER ISLAND	1139	2771	2586	SPRINGFIELD	45	49	54	ELKO	221	308	340	ARLINGTON	0	0	
BETHEL	594	1347	1113	INDIANA				EL PASO	146	169	247	BROWNSVILLE	0	0	
BETTES	864	1410	1387	EVANSVILLE	24	24	34	LAS VEGAS	0	0	0	CORPUS CHRISTI	0	0	
BIG DELTA	647	1051	1145	FORT WAYNE	64	64	102	RENO	79	127	255	DALLAS FT WORTH	18	18	
COLD BAY	499	1281	1418	INDIANAPOLIS	45	45	68	WAKEFELD	146	169	247	DEL RIO	0	0	
FAIRBANKS	654	1132	1070	SOUTH BEND	62	63	128	NEW HAMPSHIRE				EL PASO	0	0	
GULFANA	675	1299	1262					CONCORD	145	141	243	GALVESTON	0	0	
HOMER	507	1284	1325	IOWA				MT WASHINGTON OBS	74	1773	1774	HARTFORD	0	0	
JUNEAU	472	1083	1094	DES MOINES	77	77	107					INDIANAPOLIS	0	0	
KING SALMON	533	1258	1204	EUBUQUE	113	116	172	NEW JERSEY				LOUISVILLE	20	20	
KODIAK	378	922	1101	SIoux CITY	108	108	123	ATLANTIC CITY	18	46	35	PORT ARTHUR	0	0	
KOTZEBUE	778	1513	1535	WATERLOO	124	127	170	ATLANTIC CITY U	19	19	27	SAN ANGELO	0	0	
MC GRATH	672	1307	1212	KANSAS				NEWARK	28	28	34	SAN ANTONIO	0	0	
NOME	669	1478	1639	CONCORDIA	50	50	71	TRENTON U	10	30	39	VICTORIA	0	0	
ST. PAUL ISLAND	617	1717	1759	COOGE CITY	26	26	41					WICHITA FALLS	32	32	
TALKEETNA	569	1116	1109	GOODLAND	61	63	108	NEW MEXICO							
UNALASKA				TOPEKA	65	65	55	ALBUQUERQUE	6	6	7	UTAH			
VALDEZ	535	1251	1321	WICHITA	28	28	27	CLAYTON	64	64	73	MILEBAY	11	115	127
YAKUTAT	443	1082	1233					ROSWELL	19	19	17	SALT LAKE CITY	61	67	111
ARIZONA				KENTUCKY				NEW YORK				VERMONT			
FLAGSTAFF	153	202	376	COVINGTON	48	48	44	ALBANY	140	147	166	BURLINGTON	240	253	267
PHOENIX	0	0	0	LEXINGTON	23	23	0	BINGHAMTON	143	143	233				
TUCSON	0	0	0	LOUISVILLE	12	12	35	BUFFALO	128	130	180	VIRGINIA			
WINSLOW	13	13	19					NEW YORK U	31	31	29	LYNCHBURG	28	28	31
YUMA	0	0	0	LOUISIANA				NEW YORK KENNEB	25	25	42	NOVEMBER	11	11	7
ARKANSAS				PATON ROUGE	0	0	0	NEW YORK LA GUARDIA	24	24	30	RICHMOND	14	14	21
FORT SMITH	17	17	0	LAKE CHARLES	0	0	0	ROCHESTER	108	109	161	ROANOKE	10	10	32
LITTLE ROCK	16	16	5	NEW ORLEANS	0	0	0	SYRACUSE	120	123	145	WALLOPS ISLAND	15	15	15
NO. LITTLE ROCK	26	26	0	SHREVEPORT	3	3	0					WASHINGTON			
CALIFORNIA				MAINE				NORTH CAROLINA				WASHINGTON			
BAKERSFIELD	0	0	0	CAIROU	425	537	533	ASHEVILLE	37	37	50	CLYDE	335	335	
BISHOP	27	27	49	PORTLAND	163	165	282	CAPE HATTERAS R	8	0	0	GULLAYVILLE	107	107	223
BLUE CANYON	97	220	193					CHARLOTTE	26	26	10	SEATTLE	107	107	223
EUREKA U	246	779	770	MARYLAND				GREENSBORO	31	31	24	SEATTLE-TACOMA	154	154	328
FRESNO	0	0	0	BALTIMORE	20	20	27	RALPH	16	16	12	SPokane	194	194	264
LONG BEACH	0	0	0					WILMINGTON	0	0	0	STAMPEE FASE R	407	1192	688
LOS ANGELES	3	4	57	MASSACHUSETTS								WALLA WALLA	47	60	
LOS ANGELES U	0	0	5	BLUE HILL OBS R	112	130	131	NORTH DAKOTA				YAKIMA	48	101	200
MT SHASTA R	153	251	246	BOSTON	72	79	84	RISMARK	217	275	340				
OAKLAND	35	135	213	WORCESTER	165	186	178	FARGO	267	305	280	WEST VIRGINIA			
RED BLUFF	1	1	0					WILLISTON	221	278	311	BECKLEY	69	70	14
SACRAMENTO	4	6	5	MICHIGAN				OHIO				CHARLESTON	33	33	49
SAN DIEGO	0	0	22	ALPENA	248	288	450	AKRON	79	83	124	ELKINS	72	81	145
SAN FRANCISCO	74	259	243	DETROIT	76	76	91	CINCINNATI ABBE R	16	16	37	HUNTINGTON	26	26	48
SAN FRANCISCO U	132	509	461	DETROIT METRO	110	110	116	CLIFVELAND	97	102	121	PARKERSBURG	13	33	48
SANTA MARIA	85	213	308	FLINT	152	162	197	COLUMBUS	46	46	84				
STOCKTON	5	5	0	GRAND RAPIDS	115	119	149	DAYTON	44	44	70	WISCONSIN			
				Houghton Lake	258	303	401	MANSFIELD	86	93	89	GREEN BAY	189	111	167
COLORADO				LANSING	136	141	169	TOLEDO	113	116	122	LA CROSSE	112	115	157
ALAMOSA	263	370	445	MUSKOGON	152	160	189	YOUNGSTOWN	117	140	145	MADISON	178	191	224
COLORADO SPRINGS	113	120	177	SAULT STE MARIE	382	497	512					MILWAUKEE	140	157	191
DENVER	56	60	120					OKLAHOMA				WYOMING			
GRAND JUNCTION	21	23	60	MINNESOTA				OKLAHOMA CITY	23	23	12	CASPER	176	220	244
PUEBLO	46	46	55	CULUTH	357	472	489	TULSA	13	13	10	CHEYENNE	151	192	274
CONNECTICUT				INTERNATIONAL FALLS	365	440	542					LANDER	176	204	249
BRIDGEPORT	41	41	42	MINNEAPOLIS	194	206	205	OREGON				SHERIDAN	195	245	264
HARTFORD	99	99	118	ROCHESTER	181	192	241	ASTORIA	183	509	615				
				ST CLOUD	279	318	281	BURNS U	274	456	324				
DELAWARE				MISSISSIPPI				EURENE	101	195	211				
WILMINGTON	20	20	32	JACKSON	0	0	0	WEDFORD	56	66	121				
				MERIDIAN	0	0	0	PENDLETON	84	125	116				
DIST. OF COLUMBIA								PORTLAND	64	104	227				
WASHINGTON DULLES	33	33	43	MISSOURI				SALEM	87	220	214				
WASHINGTON NATIONAL	4	4	14	COLUMBIA REGIONAL	56	56	42	SEXTON SUMMIT R	172	423	391				
				KANSAS CITY	63	63	50	PENNSYLVANIA							
FLORIDA				ST JOSEPH	81	81	54	ALLENTOWN	26	26	91				
APPALACHICOLA U	0	0	0	ST LOUIS	30	30	35	ERIE	108	122	208				
DAYTONA BEACH	0	0	0	SPRINGFIELD	42	42	41	HARRISBURG	47	57	51				
FORT MYERS	0	0	0					PHILADELPHIA	27	22	38				
JACKSONVILLE	0	0	0	MONTANA				PITTSBURGH	48	53	121				
KEY WEST	0	0	0	BILLINGS	127	152	244	SCRANTON	42	83	141				
MIAMI	0	0	0	GLASGOW	232	297	308	WILLIAMSPORT	65	65	110				
ORLANDO	0	0	0	GREAT FALLS	225	351	320								
PENSACOLA	0	0	0	HAVRE	236	353	322	RHODE ISLAND							
TALLAHASSEE	0	0	0	HELENA	242	348	394	BLOCK ISLAND	68	69	99				
TAMPA	0	0	0	KALISPELL	274	531	558	PROVIDENCE	120	121	103				
WEST PALM BEACH	0	0	0	PILES CITY	168	207	242								
				MISSOULA	243	415	411	SOUTH CAROLINA							
GEORGIA								CHARLESTON	0	0	0				
ATLANTA	21	21	8					CHARLESTON L	0	0	0				
AUGUSTA	18	18	8					COLUMBIA	14	14	14				
COLUMBUS	3	3	0					GRANVILLE-SPRNBURG	27	27	9				
MACON	2	2	0												
ROME	12	12	11					SOUTH DAKOTA							
SAVANNAH	0	0	0					ABERDEEN	142	217	235				
								HUPON	140	180	191				
								RAPID CITY	144	243	221				
								SIoux FALLS	167	172	193				





## STORM SUMMARY

SEPTEMBER, 1980

STATE	TORNADOES					HAILSTORMS				WINDSTORMS				LIGHTNING				HEAVY SNOWSTORMS AND BLIZZARDS				# ICE STORMS				ALL OTHER			
	NUMBER	DAYS	DEATHS	INJURIES	DAMAGE	DEATHS	INJURIES	DAMAGE		DEATHS	INJURIES	DAMAGE		DEATHS	INJURIES	DAMAGE		DEATHS	INJURIES	DAMAGE		DEATHS	INJURIES	DAMAGE		DEATHS	INJURIES	DAMAGE	
								PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS				
Alabama	2																												
Alaska										1																			
Arizona												5															5		
Arkansas																													
California	1	1																							136				
Colorado																													
Connecticut														1															
Delaware																													
Florida	3	3																											
Georgia																													
Idaho																													
Illinois	3	3										5																	
Indiana										1		5																	
Iowa																													
Kansas																													
Kentucky	1	1															4												
Louisiana																													
Maine																													
Maryland and DC																													
Massachusetts																													
Michigan	2	1												3															
Minnesota		1																											
Mississippi				1																									
Missouri																													
Montana																													
Nebraska																													
Nevada										1																			
New Hampshire																													
New Jersey																													
New Mexico																													
New York																													
North Carolina																													
North Dakota																													
Oklahoma	2	2																											
Oregon										1					5														
Pennsylvania																													
Rhode Island																													
South Carolina																													
South Dakota														1	1														
Tennessee																													
Texas	1	1		1	4									1	4														
Utah																													
Vermont																													
Virginia										1		5																	
Virgin Island										2																			
Washington																													
West Virginia																													
Wisconsin	2	1																											
Wyoming																													

## Average monthly values

SEPTEMBER 1980

[illegible][illegible][illegible]



## Average monthly values

SEITZMAIER 1480

[illegible]

# RAWINSONDE DATA

Average monthly values

SEPTEMBER 1980

FLINT, MI 90C MB												GLASSBORO, NJ 911 MB												GRAND JUNCTION, CO 854 MB												GREAT FALLS, MT 888 MB												GREEN BAY, WI 940 MB											
Standard pressure surface mb												Standard pressure surface mb												Standard pressure surface mb												Standard pressure surface mb												Standard pressure surface mb											
No. of observations												No. of observations												No. of observations												No. of observations												No. of observations											
Dynamic height meters												Dynamic height meters												Dynamic height meters												Dynamic height meters												Dynamic height meters											
Temperature °C												Temperature °C												Temperature °C												Temperature °C												Temperature °C											
Dew Point °C												Dew Point °C												Dew Point °C												Dew Point °C												Dew Point °C											
Resultant Wind Direction tens of deg.												Resultant Wind Direction tens of deg.												Resultant Wind Direction tens of deg.												Resultant Wind Direction tens of deg.												Resultant Wind Direction tens of deg.											
Speed m.p.h.												Speed m.p.h.												Speed m.p.h.												Speed m.p.h.												Speed m.p.h.											
5FC 30	236	12.0	10.8	20	7	30	696	9.5	5.3	36	5	30	1,472	14.3	4.6	12	3.0	30	1,118	9.7	2.6	24	3.2	30	557	13.4	7.9	26	3.9	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8						
1000																																																											
950 30	579	14.2	8.9	24	3.0	30	997	13.3	3.8	29	3.6	29	1,513	15.8	1.2	12	3.0	30	1,483	11.9	1.6	25	6.1	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8												
900 30	1,035	12.3	7.1	26	5.7	30	997	13.3	3.8	29	3.6	29	1,513	15.8	1.2	12	3.0	30	1,483	11.9	1.6	25	6.1	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8												
850 30	1,513	10.1	2.7	27	8.0	30	1,477	11.8	9.2	29	5.6	29	1,513	15.8	1.2	12	3.0	30	1,483	11.9	1.6	25	6.1	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8												
800 30	2,016	8.9	-4.0	27	9.0	30	1,982	8.6	-2.2	29	7.2	30	2,016	15.9	-3.3	15	2.4	30	1,988	8.8	-1.5	27	8.2	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8												
750 30	2,548	6.4	-6.2	27	19.1	30	2,478	6.1	-5.5	28	8.0	30	2,572	12.9	-2.5	23	2.1	30	2,520	9.6	-7.4	27	8.2	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8												
700 30	3,111	3.5	-8.6	27	11.3	30	3,072	1.4	-7.7	29	8.6	30	3,147	8.6	-4.7	24	4.3	30	3,080	1.8	-6.0	27	8.4	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8												
650 30	3,709	1.1	-13.5	27	12.6	30	3,666	-1.8	-12.6	28	10.5	30	3,755	4.0	-8.0	25	6.7	30	3,675	-1.5	-10.8	28	10.8	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8												
600 30	4,347	-3.3	-16.9	27	14.0	30	4,298	-5.8	-15.7	28	12.3	30	4,400	-1.8	-12.0	25	7.4	30	4,308	-5.4	-15.1	28	11.1	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8												
550 30	5,030	-7.8	-21.2	27	15.4	30	4,975	-10.1	-20.6	28	13.5	30	5,089	-5.3	-18.3	25	8.6	30	4,986	-9.6	-19.7	27	12.0	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8												
500 30	5,767	-11.9	-25.6	27	17.3	30	5,704	-14.7	-24.6	28	15.0	30	5,831	-9.7	-24.4	26	9.8	30	5,735	-18.6	-24.9	27	12.9	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8												
450 30	6,585	-17.2	-31.6	27	19.1	30	6,494	-19.9	-30.4	28	16.2	30	6,637	-14.8	-30.8	26	10.4	30	6,505	-19.9	-30.1	27	14.2	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8												
400 30	7,437	-23.7	-36.8	27	20.7	30	7,357	-26.2	-35.6	28	17.7	30	7,517	-21.5	-35.7	26	13.0	30	7,368	-26.3	-37.3	27	16.2	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8												
350 30	8,402	-30.6	-42.1	27	21.5	30	8,312	-33.6	-42.1	28	19.6	30	8,450	-28.9	-41.7	26	14.6	30	8,321	-33.4	-41.6	27	17.4	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8												
300 30	9,475	-38.9	-48.5	27	24.1	30	9,371	-42.1	-47.2	28	22.0	30	9,571	-37.3	-49.0	26	17.4	30	9,376	-41.3	-47.7	28	18.7	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8												
250 30	10,701	-48.3	-57.2	27	26.8	30	10,583	-50.1	-57.2	28	24.0	30	10,805	-46.5	-57.2	26	18.6	30	10,592	-49.5	-57.2	28	20.9	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8												
200 30	12,182	-56.9	-65.8	27	29.1	30	12,022	-59.7	-65.8	28	24.7	30	12,259	-54.6	-65.8	26	23.7	30	12,034	-58.4	-65.8	28	20.9	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8												
175 30	12,984	-58.8	-67.7	27	31.6	30	12,875	-61.7	-67.7	28	24.4	30	13,108	-57.7	-67.7	26	24.1	30	12,987	-55.9	-67.7	28	20.7	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8												
150 30	13,945	-59.7	-68.6	27	34.6	30	13,859	-55.4	-68.6	28	21.5	30	14,075	-60.5	-68.6	26	19.6	30	13,868	-56.0	-68.6	28	20.7	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8												
125 30	15,086	-61.1	-70.0	27	38.0	30	15,019	-56.6	-70.0	28	19.5	30	15,202	-63.6	-70.0	26	15.4	30	15,024	-57.4	-70.0	28	18.3	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8												
100 30	16,469	-61.2	-70.1	27	40.2	30	16,429	-57.9	-70.1	28	15.3	30	16,567	-65.1	-70.1	27	10.4	30	16,393	-58.1	-70.1	28	14.3	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8												
80 30	17,855	-59.4	-68.3	28	10.9	30	17,839	-57.1	-68.3	28	12.0	29	17,976	-64.0	-68.3	27	5.2	29	17,834	-57.9	-68.3	28	10.8	29	17,842	-58.7	-68.3	28	12.0	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8						
70 30	18,959	-59.3	-68.2	28	8.9	30	18,943	-57.0	-68.2	28	9.4	28	18,777	-61.2	-68.2	27	4.8	28	18,735	-57.2	-68.2	28	8.2	28	18,741	-57.9	-68.2	28	9.4	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8						
60 30	19,669	-56.5	-65.4	29	5.9	30	19,663	-56.1	-65.4	28	7.2	28	19,713	-59.6	-65.4	28	2.4	26	19,653	-56.9	-65.4	28	7.5	28	19,657	-56.8	-65.4	29	6.9	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8						
50 30	20,831	-54.9	-63.8	28	4.9	30	20,823	-55.4	-63.8	28	6.7	28	20,860	-57.3	-63.8	28	1.5	26	20,809	-56.1	-63.8	29	5.2	28	20,817	-55.3	-63.8	29	4.4	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8						
40 30	22,263	-52.9	-61.8	28	3.7	29	22,245	-54.4	-61.8	28	5.4	27	22,283	-54.7	-61.8	28	4.8	24	22,231	-54.6	-61.8	28	4.5	28	22,248	-53.0	-61.8	29	3.9	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8						
30 30	24,132	-50.3	-59.2	28	2.0	28	24,092	-52.4	-59.2	28	5.8	27	24,139	-51.6	-59.2	28	1.4	24	24,078	-52.6	-59.2	28	4.8	27	24,118	-50.2	-59.2	28	3.6	30	1,011	11.5	4.8	26	6.3	30	1,487	9.3	4.7	27	7.4	30	1,989	7.4	-2.3	27	9.4	30	2,520	9.6	-7.4	27	1.8						
25 30	25,328	-48.8	-57.7	28	2.0	28	25,276	-50.7	-57.7	27	5.8	27	25,326	-50.3	-57.7	28	1.4	23	25,266	-50.7	-57.7	28	4.1	26	25,302	-48.7	-57.7	28	4.1	30	1,011	11.5	4.8																										



## Average monthly values

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[illegible]

* MEDFORD, ME 945 MB															* MEXICA, MEXICO 1012 MB															* MIDLAND, TX 916 MB															* MONTEREY, MEXICO 963 MB															* MONTEY, MO 967 MB														
SFC	30	401	10.9	6.4	31	+2	30	11	23.2	22.8	07	1.8	30	874	18.4	14.6	09	1.2	29	423	22.5	19.7	12	1.2	30	438	18.4	14.7	14	1.5																																												
1000							30	112	24.0	22.7	10	2.9																																																														
950	30	571	14.2	7.0	29	+6	30	561	23.2	20.0	11	6.4																																																														
900	30	1,050	14.1	5.3	31	3	30	1,034	21.0	15.4	12	8.1	30	1,028	19.7	15.7	16	1.7	29	568	22.1	19.2	12	2.4	30	584	20.0	14.3	18	2.6																																												
850	30	1,518	12.8	2.1	12	1.3	30	1,521	18.4	11.2	12	7.1	30	1,521	19.9	12.9	16	1.1	29	1,531	20.1	17.1	13	6.0	30	1,530	17.6	9.6	26	5.2																																												
800	30	2,017	10.4	-1.0	22	1.0	30	2,046	15.4	7.9	12	6.1	30	2,042	17.7	8.4	19	4.3	29	2,050	16.2	9.1	13	7.0	30	2,060	14.7	6.4	25	5.2																																												
750	30	2,551	7.7	-5.3	24	2.5	30	2,591	12.9	4.2	12	5.6	30	2,590	13.9	3.8	18	1.7	29	2,598	13.7	3.0	13	4.6	30	2,603	11.2	2.4	26	5.3																																												
700	30	3,116	4.4	-9.1	21	3.5	30	3,164	9.0	1.7	12	4.9	30	3,168	9.9	3.12	6	2.29	1	3,176	10.5	-1.8	12	3.2	30	3,176	7.6	-2.5	26	4.6																																												
650	30	3,716	1.9	-13.1	21	4.1	30	3,778	5.6	-3.5	12	4.7	30	3,780	6.2	-3.1	20	1.6	29	3,790	6.8	-5.6	10	1.7	30	3,783	5.9	-7.0	27	4.8																																												
600	30	4,355	-2.5	-18.0	26	4.6	30	4,429	2.1	-8.0	12	4.1	30	4,431	2.0	-7.8	22	1.9	29	4,443	2.7	-9.7	09	1.4	30	4,429	-1.1	-12.7	27	5.5																																												
550	30	5,019	-7.1	-22.2	27	5.0	30	5,124	-1.4	-13.2	09	4.0	30	5,129	-1.5	-12.5	24	2.1	29	5,141	-1.6	-13.6	09	2.1	30	5,120	-1.2	-18.5	27	6.5																																												
500	30	5,774	-12.4	-27.1	27	5.6	30	5,881	-5.7	-18.8	08	3.9	30	5,882	-6.1	-18.7	24	2.9	29	5,894	-5.8	-21.1	11	3.1	30	5,882	-4.5	-23.0	27	8.1																																												
450	30	6,575	-18.1	-32.2	26	6.5	30	6,681	-12.1	-21.6	12	3.7	30	6,682	-12.4	-21.6	24	2.9	29	6,711	-11.0	-24.1	09	3.1	30	6,676	-13.5	-26.2	27	9.6																																												
400	29	7,441	-24.3	-38.6	28	6.8	30	7,597	-16.2	-29.9	07	3.6	30	7,594	-17.2	-28.0	26	3.8	29	7,607	-16.6	-31.2	09	3.2	30	7,561	-19.4	-32.4	27	10.9																																												
350	29	8,402	-31.3	-44.7	28	7.4	30	8,591	-23.3	-36.5	05	2.1	30	8,585	-24.0	-33.5	26	6.8	29	8,600	-23.5	-37.1	07	3.1	30	8,543	-26.4	-37.3	27	12.5																																												
300	29	9,470	-39.9	-50.9	28	8.3	29	9,698	-31.7	-44.2	35	1.9	30	9,686	-32.3	-42.7	26	7.9	29	9,706	-31.9	-45.8	04	3.5	30	9,636	-34.8	-45.2	27	16.1																																												
250	29	10,668	-47.6		30	8.9	28	10,960	-41.9		30	3.7	30	10,948	-42.4		27	10.4	29	10,967	-42.0		01	5.5	30	10,882	-44.6		27	20.1																																												
200	28	12,137	-53.9		28	10.0	28	12,431	-54.3		26	6.5	30	12,419	-53.9		28	13.1	29	13,441	-53.5		36	6.2	30	12,342	-54.7		28	21.8																																												
150	27	12,991	-56.0		27	12.4	28	13,274	-60.8		29	7.1	30	13,265	-59.7		28	13.0	29	13,287	-60.0		36	6.4	30	13,180	-59.8		28	22.1																																												
100	26	13,567	-57.4		26	12.6	28	14,217	-67.8		31	7.9	30	14,215	-65.5		28	14.0	29	14,335	-65.6		40	7.1	30	14,140	-64.0		28	15.9																																												
50	25	15,112	-59.6		27	10.8	28	15,300	-72.4		36	4.6	30	15,312	-69.4		28	7.8	29	15,323	-72.0		02	3.1	30	15,247	-67.5		29	14.8																																												
0	24	16,502	-60.9		27	8.8	28	16,605	-73.1		34	6.0	28	16,635	-71.1		28	3.9	29	16,611	-72.8		05	4.1	30	16,588	-67.0		28	10.8																																												
50	25	17,891	-60.5		28	5.8	27	17,922	-65.6		38	9.9	27	17,968	-67.6		30	1.7	29	17,950	-69.1		07	7.1	30	17,945	-64.6		29	5.1																																												
50	26	18,725	-59.8		28	4.0	27	18,724	-66.8		39	10.9	27	18,718	-67.8		07	3.0	29	18,755	-66.1		08	8.9	29	18,766	-62.4		10	2.7																																												
60	29	19,641	-58.9		29	3.4	27	19,664	-63.6		64	11.0	27	19,726	-62.1		11	8.6	28	19,693	-63.7		09	8.9	29	19,724	-59.8		10	1.3																																												
60	30	20,339	-57.9		29	2.0	27	20,355	-59.7		68	11.4	27	20,662	-58.9		09	8.8	28	20,620	-60.6		09	9.8	20	20,598	-57.9		10	10.1																																												
70	30	21,249	-56.7		29	0.8	27	21,269	-56.6		70	12.0	27	21,580	-56.4		09	7.5	28	21,219	-57.3		09	11.1	29	22,294	-54.1		09	2.2																																												
70	30	24,092	-52.9		28	1.4	25	24,039	-52.1		09	14.1	27	24,117	-52.5		08	9.1	27	24,599	-52.4		09	12.6	29	24,151	-51.4		07	3.4																																												
70	30	25,274	-50.8		28	4.0	24	25,244	-49.7		09	15.1	26	25,301	-50.9		09	9.4	25	25,243	-50.7		09	12.4	29	25,339	-50.2		07	4.7																																												
70	30	26,189	-48.5		27	4.5	24	26,715	-46.8		08	17.0	24	26,754	-48.6		09	9.8	24	26,710	-47.5		09	13.3	29	26,603	-48.0		08	5.3																																												
70	30	28,637	-46.5		27	4.7	22	28,642	-43.4		08	17.4	23	28,667	-45.5		09	10.6	11	28,638	-43.8		09	15.6	28	28,712	-45.3		08	5.0																																												
70	30	31,586	-43.3		26	3.4	9	31,418	-40.7		18	31.407	-42.7		08	13.5								17	31,441	-42.0		08	4.3																																													
70	30	33,766	-39.1		22	1.7			-10.1		11	33,632	-38.2											5	33,808	-39.9																																																



## Average monthly values

SEPTEMBER 1980

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# RAWINSONDE DATA

Average monthly values

ESTIMATED 1960

ALT LAKE CITY, UT 872 MB										SAN JUAN, P. R. 998 MB										SAN JUAN, P. R. 1011 MB										SAULT STE MARIE, MI 989 MB									
Resultant Wind					Resultant Wind					Resultant Wind					Resultant Wind																								
No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Speed m.p.s.																
1	1.079	11.4	9.6	17	2.1	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
2	1.136	11.4	9.3	15	2.2	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
3	1.188	11.4	9.0	12	2.6	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
4	1.238	11.4	8.7	9	2.6	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
5	1.288	11.4	8.4	6	2.1	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
6	1.338	11.4	8.1	3	2.5	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
7	1.388	11.4	7.8	0	2.9	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
8	1.438	11.4	7.5	31	2.5	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
9	1.488	11.4	7.2	28	2.9	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
10	1.538	11.4	6.9	25	2.5	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
11	1.588	11.4	6.6	22	2.9	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
12	1.638	11.4	6.3	19	2.5	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
13	1.688	11.4	6.0	16	2.9	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
14	1.738	11.4	5.7	13	2.5	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
15	1.788	11.4	5.4	10	2.9	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
16	1.838	11.4	5.1	7	2.5	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
17	1.888	11.4	4.8	4	2.9	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
18	1.938	11.4	4.5	1	2.5	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
19	1.988	11.4	4.2	31	2.9	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
20	2.038	11.4	3.9	28	2.5	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
21	2.088	11.4	3.6	25	2.9	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
22	2.138	11.4	3.3	22	2.5	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
23	2.188	11.4	3.0	19	2.9	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
24	2.238	11.4	2.7	16	2.5	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
25	2.288	11.4	2.4	13	2.9	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
26	2.338	11.4	2.1	10	2.5	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
27	2.388	11.4	1.8	7	2.9	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
28	2.438	11.4	1.5	4	2.5	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
29	2.488	11.4	1.2	1	2.9	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
30	2.538	11.4	0.9	31	2.5	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
31	2.588	11.4	0.6	28	2.9	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
32	2.638	11.4	0.3	25	2.5	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
33	2.688	11.4	0.0	22	2.9	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
34	2.738	11.4	-0.3	19	2.5	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
35	2.788	11.4	-0.6	16	2.9	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
36	2.838	11.4	-0.9	13	2.5	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
37	2.888	11.4	-1.2	10	2.9	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
38	2.938	11.4	-1.5	7	2.5	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
39	2.988	11.4	-1.8	4	2.9	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
40	3.038	11.4	-2.1	1	2.5	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
41	3.088	11.4	-2.4	31	2.9	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
42	3.138	11.4	-2.7	28	2.5	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
43	3.188	11.4	-3.0	25	2.9	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
44	3.238	11.4	-3.3	22	2.5	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
45	3.288	11.4	-3.6	19	2.9	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
46	3.338	11.4	-3.9	16	2.5	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
47	3.388	11.4	-4.2	13	2.9	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
48	3.438	11.4	-4.5	10	2.5	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
49	3.488	11.4	-4.8	7	2.9	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
50	3.538	11.4	-5.1	4	2.5	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7																
51	3.588	11.4	-5.4	1	2.9	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17	2.7	29	1.285	11.4	5.4	17																	



## Average monthly values

SEPTEMBER 1980

YAP, CAROLINE IS.  
1027 MF

500	30	14	27.7	24.8	24	2.9
1000	30	79	26.8	24.6	25	3.6
500	25	71	23.6	22.3	25	6.7
900	30	1,005	20.8	19.1	26	6.4
850	30	1,499	18.2	16.2	28	5.5
800	30	2,019	16.5	12.4	27	4.7
750	30	2,566	13.3	9.4	26	4.2
700	25	3,145	10.4	5.1	26	3.6
650	25	3,760	7.4	1.0	24	3.7
600	30	4,415	3.3	-3.2	24	3.1
550	30	5,116	-7.3	-8.4	22	2.7
500	30	5,871	-4.7	-12.8	21	1.8
450	30	6,696	-7.4	-17.1	14	1.9
400	25	7,597	-14.6	-23.8	12	3.5
350	25	8,599	-21.4	-30.6	10	4.4
300	30	9,715	-29.5	-38.7	09	6.1
250	25	11,056	-19.7	-46.4	08	7.5
200	29	12,473	-52.4		07	10.3
175	29	13,888	-59.5		06	11.4
150	29	14,270	-67.4		06	13.7
125	29	15,144	-74.4		07	15.8
100	26	16,629	-77.1		06	12.7
50	28	17,471	-70.1		06	10.8
20	28	18,781	-66.4		06	8.8
50	27	19,674	-63.2		06	6.3
50	27	20,805	-66.4		06	4.4
40	26	22,210	-56.6		06	3.5
30	26	24,000	-52.7		10	4.5
20	26	25,000	-50.7		06	5.3
15	24	26,697	-47.0		06	9.1
10	22	28,616	-43.9		10	13.4
5	21	31,378	-19.4			



## SOLAR RADIATION INTENSITIES

Tabulated in langleys per minute on a surface normal to the direction of the sun.

## NET RADIATION

Net radiation in langley's per day (8 a.m. to 8 a.m.) at Palmer, Alaska.

Date . . . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langley . . .		-43		-9			-1		-1	-7	10	42	-7		-1	-9			33	28	32			50	35				-4	-1		1

# REFERENCE NOTES

## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES:

Dates in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

- + And also on an earlier date or dates.
- D Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snowfall.

CLIMATOLOGICAL DATA - METRIC UNITS: Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

- B Number of days maximum 21.1°C. or above for Alaskan Stations.
- Y Peak Gust.
- + And also on an earlier date or dates.
- U Indicates Urban site.
- R Indicates Rural site.
- Ø Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

1 foot = 0.3048 meters  
 °F. =  $\frac{9}{5} \times ^\circ\text{C} + 32$   
 1 inch = 25.4 millimeters  
 1 mile per hour = 0.447 meters per second

HEATING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

COOLING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

## STORM SUMMARY:

- o Includes crop damage.
- C Crop damage.
- \* No occurrence of storms or unusual weather phenomena reported.
- @ Includes heavy sleet storm.
- Ø Freezing drizzle and freezing rain, commonly known as glaze.
- # For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.
- ± No Storm Data Report received for this State.
- ✓ Report Incomplete.
- † Storm damages are placed in categories varying from 1 to 9 as follows:
  - 1 Less than \$50
  - 2 \$50 to \$500
  - 3 \$500 to \$5,000
  - 4 \$5,000 to \$50,000
  - 5 \$50,000 to \$500,000
  - 6 \$500,000 to \$5 Million
  - 7 \$5 Million to \$50 Million
  - 8 \$50 Million to \$500 Million
  - 9 \$500 Million to \$5 Billion

## RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, G.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Dew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Dew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Dew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygrometers. These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

- \* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.
- + Observations for these stations are scheduled at 0000 G.C.T.
- † Dew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Dew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Dew Point temperatures replaced Relative Humidity January 1967.

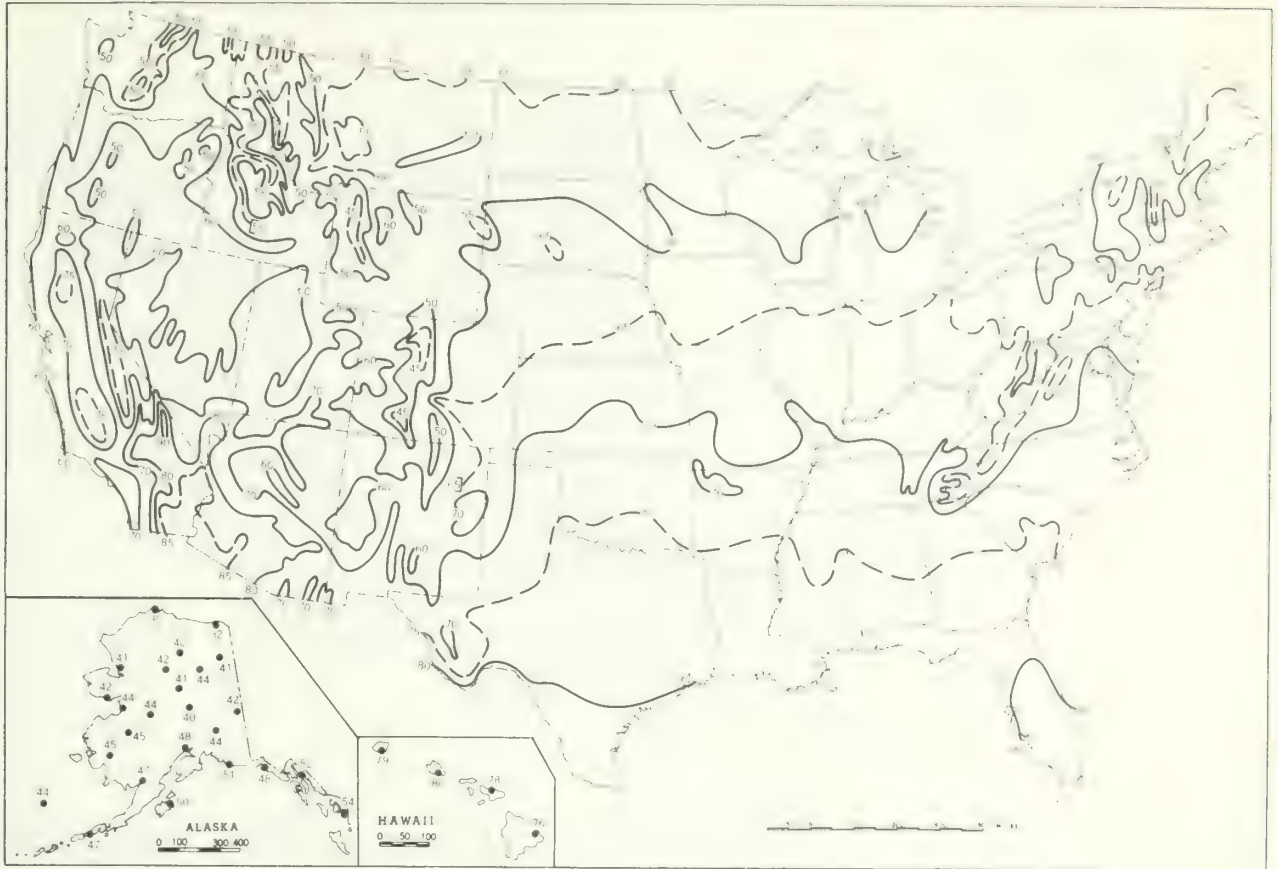
SOLAR RADIATION INTENSITIES: Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

( )	Clouds Present	DM	Moderate Dust	HM	Moderate Haze	KS	Slight Smoke
*	Values corresponding to true solar noon	DS	Slight Dust	HS	Slight Haze	M	Moderate Haze-indeterminable
BD	Blowing Dust	F	Fog	I	Intense Haze-indeterminable	N	Sand
BN	Blowing Sand	GF	Ground Fog	K	Smoke	S	Slight Haze-indeterminable
D	Dust	H	Haze	KI	Intense Smoke		
DI	Intense Dust	HI	Intense Haze	KM	Moderate Smoke		

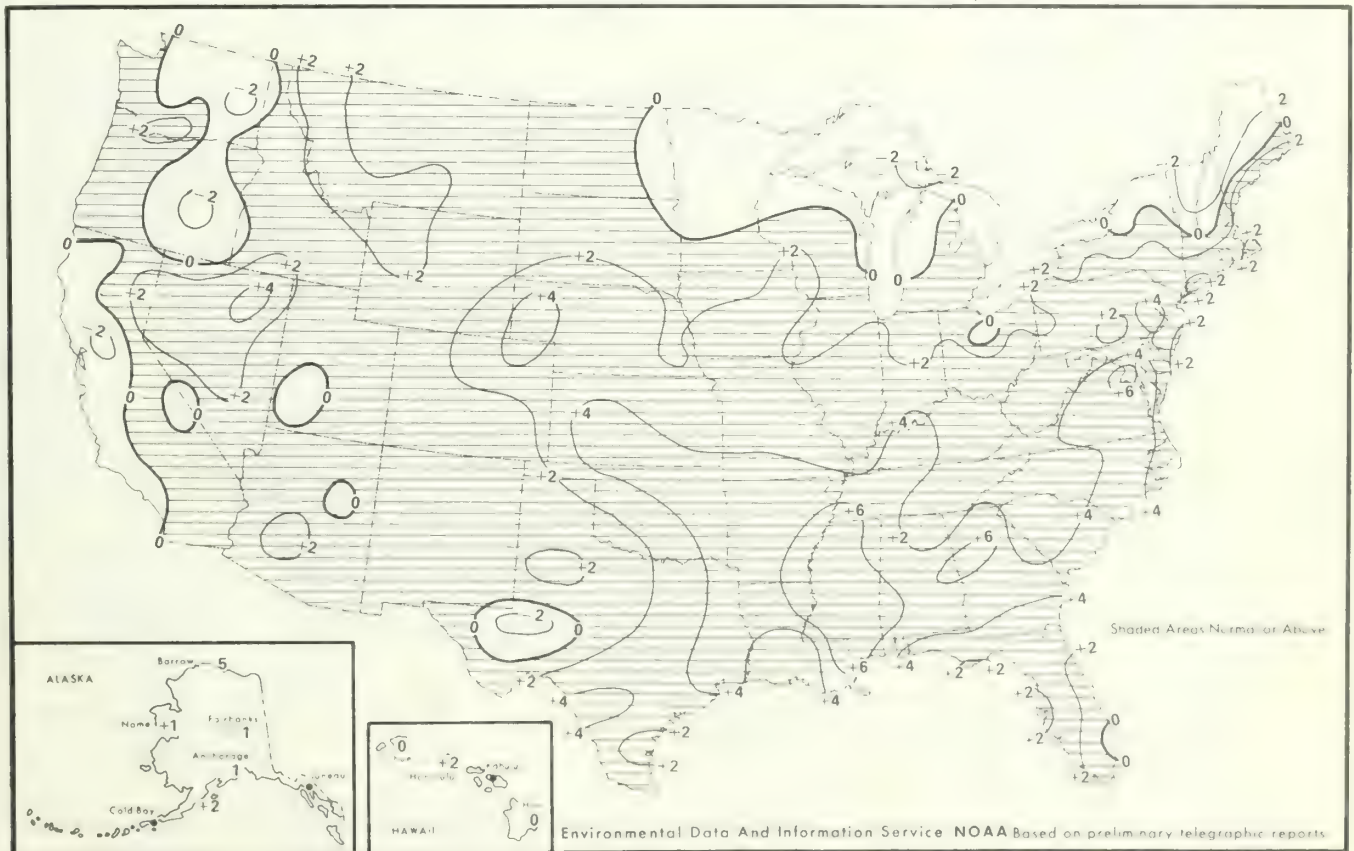
NET RADIATION: The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of sod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.

Chart 1. A. Normal Daily Average Temperature (°F. 1941-70), September.



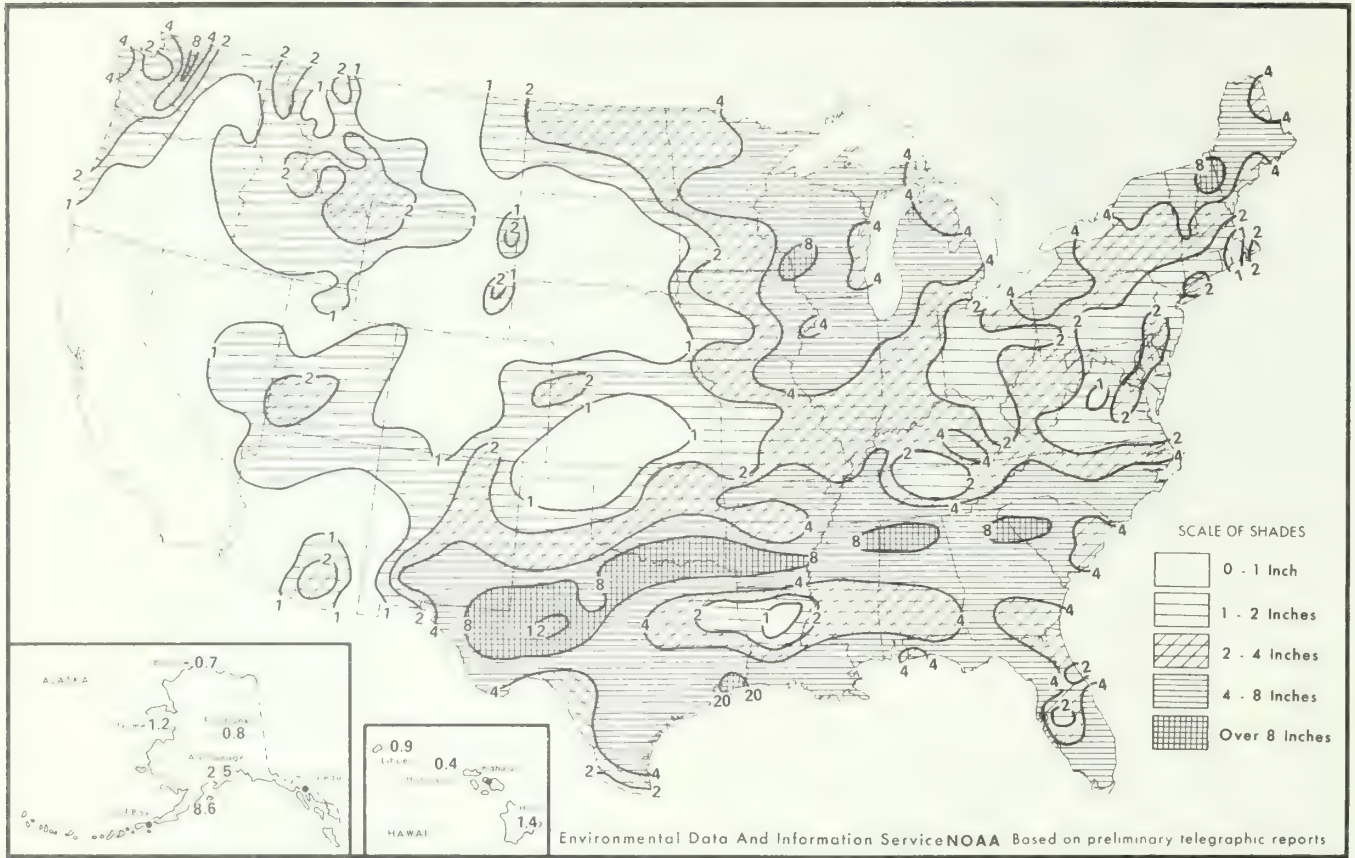
B. Temperature Departure from 30 - Year Mean (°F 1941-70), September 1980



Environmental Data And Information Service NOAA Based on preliminary telegraphic reports.



Chart II A Total Precipitation (Inches), September 1980



B Percentage of Normal Precipitation, September 1980

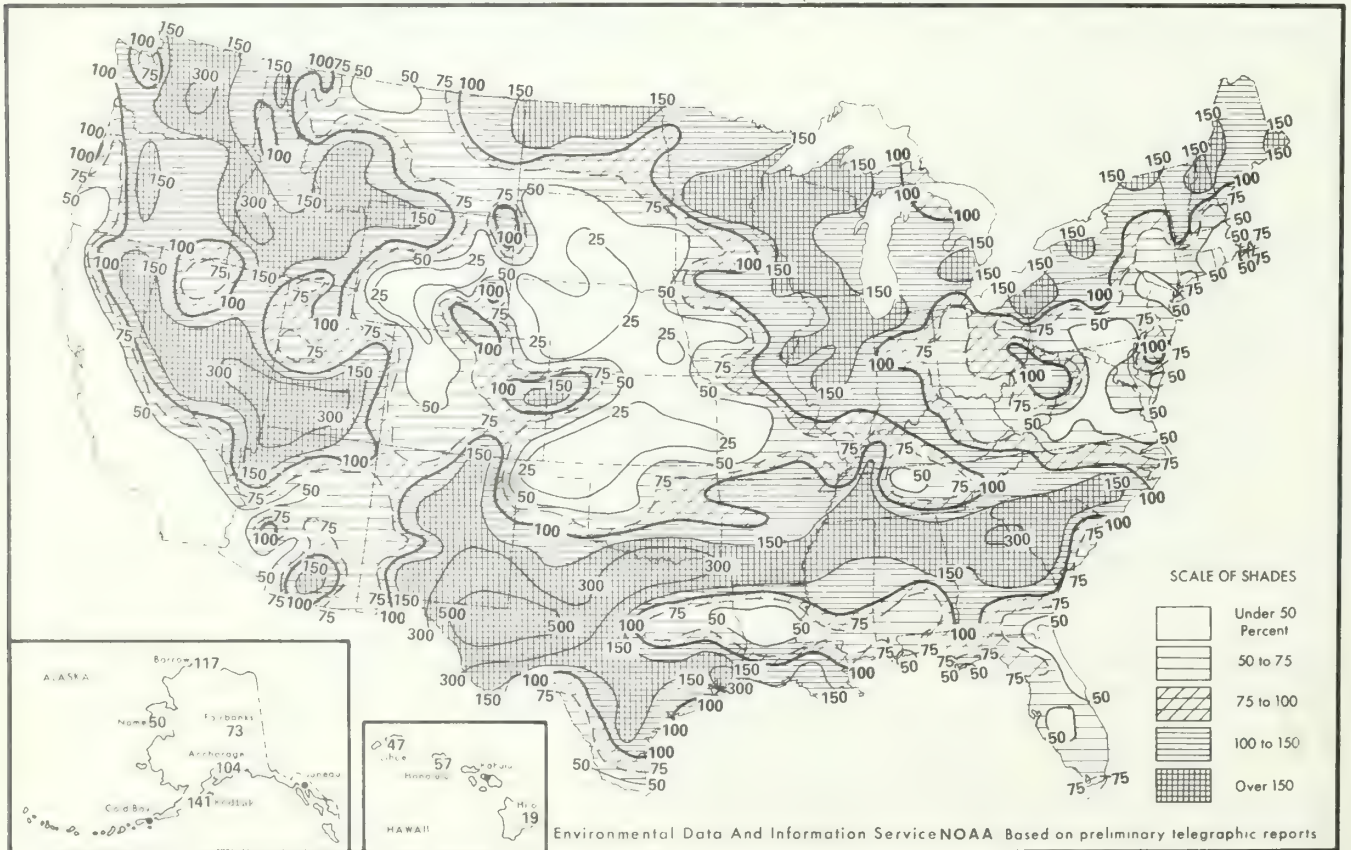
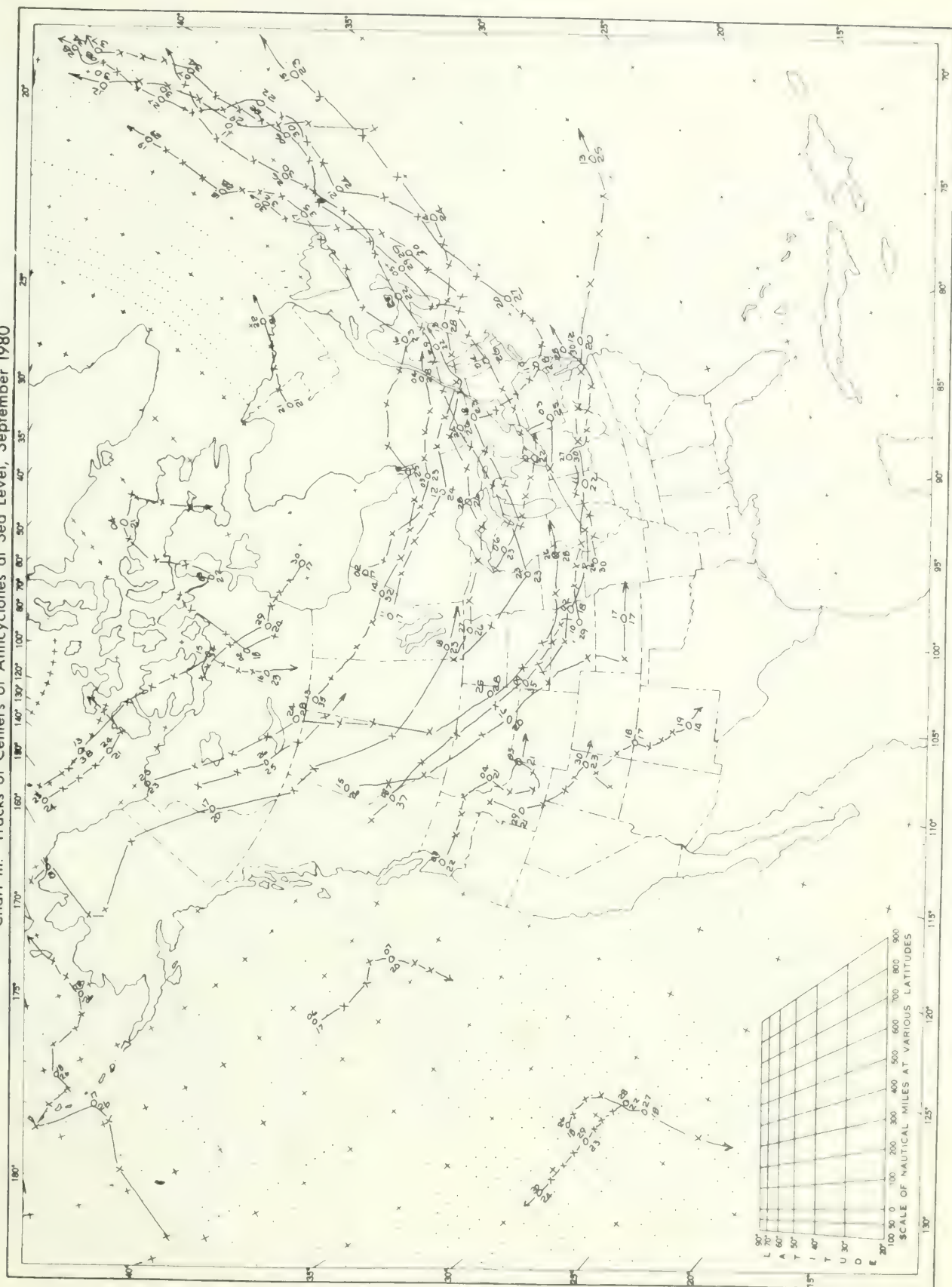


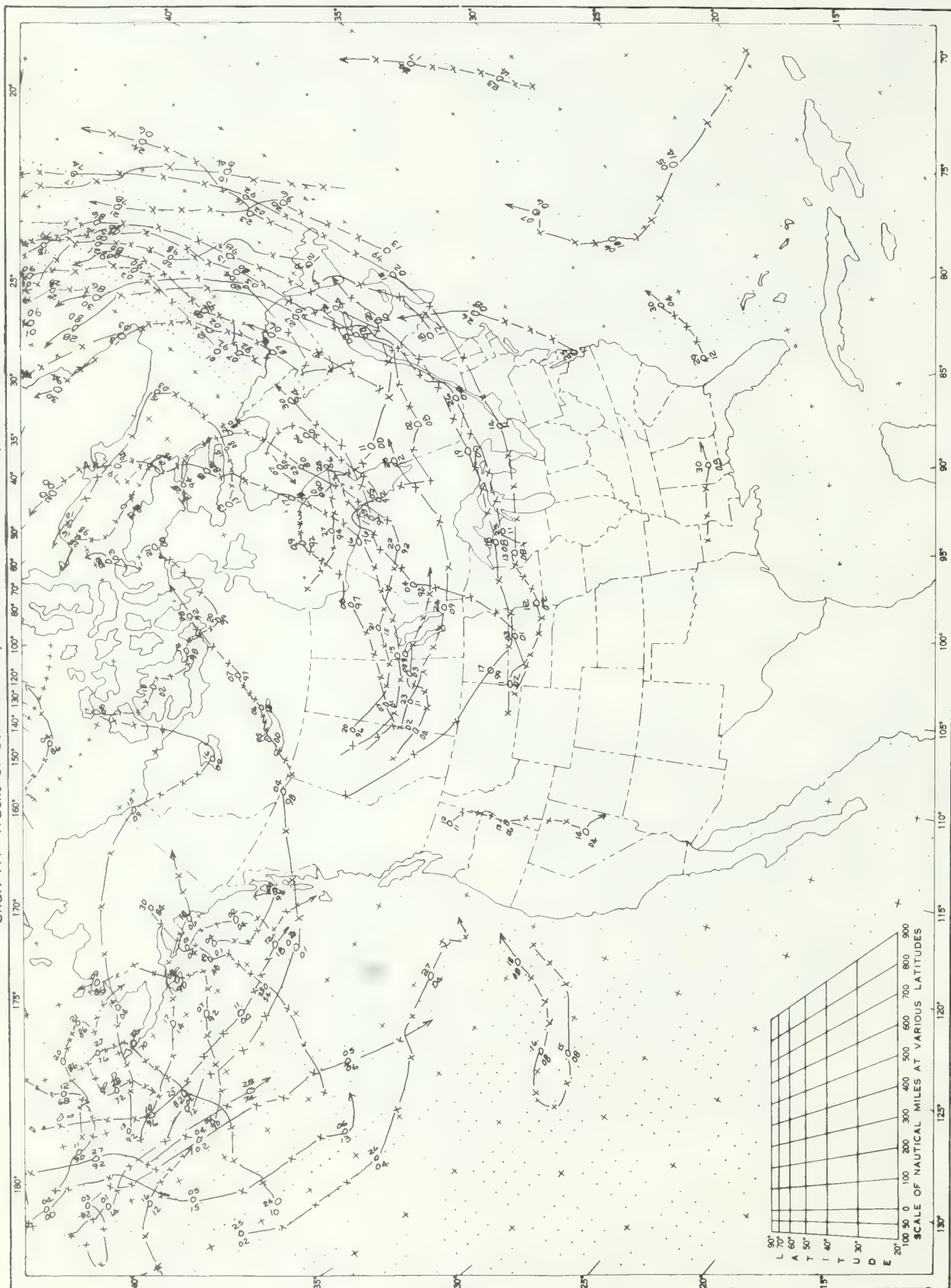
Chart III. Tracks of Centers of Anticyclones at Sea Level, September 1980



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar  
X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track  
indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.



Chart IV. Tracks of Centers of Cyclones at Sea Level, September 1980













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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
ENVIRONMENTAL DATA AND INFORMATION SERVICE  
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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



"I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AND IS COMPILED FROM INFORMATION RECEIVED AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA 28801."

*Samuel B. Mitchell*

DIRECTOR  
NATIONAL CLIMATIC CENTER

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NOTE: Late reports and corrections will be carried in the June and December issues of this publication. An explanatory page "Description of Charts" will be carried in the January and July issues.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

OCTOBER 1980

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist  
Environmental Data and Information Service, NOAA

The weather switched abruptly from hot summer to cool fall early in October. Weather systems moved rapidly through the United States with increasingly cooler surges of polar air behind each system. The cooler air of fall dominated and pushed the warm, moist air of summer eastward and southward. Heavy showers and thunderstorms resulted when the cool air confronted the warmer air. During the latter part of the month, precipitation in the North was frequently in the form of snow. Many of the summer drought areas received enough rain to begin restoring the water reserves.

During the first five days of the month, an upper trough of low pressure moved slowly eastward from the Mississippi Valley. It triggered rainfall over much of the eastern United States and brought cooler air to the area behind it and east of the Rockies.

FIRST WEEK: The cooler air moved slowly eastward during the first full week of the month and warm air pushed over the Rockies into the Plains. Precipitation was confined to the Northeast and southern Florida early in the week. At midweek, another cold front entered the Pacific Northwest and brought rain there and to the northern Plateau and central and northern Rockies as it moved into the northern Plains. This cold front moved rapidly eastward, but rain and a few snowshowers were confined to the Great Lakes area and the Northeast as the front moved through. Meanwhile, another system triggered showers along the west coast from northern California through Washington.

SECOND WEEK: Another, stronger weather system moved onto the northwest coast. Rain, with snow at higher elevations, fell in the Pacific Northwest and central

Rockies as the storm moved southeastward. It developed into an intense system as it moved out of the central Rockies and northeastward. Thunderstorms rumbled over the Plains and snow, up to 4 feet, whitened the Rockies. The center of the storm moved into Canada but the cold air behind it moved eastward through much of the United States spreading moderate to heavy rain to a line from eastern Texas to New England.

THIRD WEEK: The cold air, with its line of showers, moved off the east coast on the first day and warmer air returned to the Plains. However, at midweek, another storm formed in the northern Plains and cold air surged in behind it. At the same time a low pressure system off Florida moved northward along the east coast. Moderate rain and snow covered the previously dry areas of Montana and spread eastward while the Florida storm lashed the east coast. The rain was needed in most places but was unwanted in parts of the western Corn Belt where some corn was still to be harvested.

FOURTH WEEK: Warm, moist air returned to the southern Plains. A low pressure system, moving out of the central Rockies into the moist air, triggered moderate snow from Nebraska to northern Illinois and showers and thunderstorms southward to the gulf coast. Some heavy rain fell along the coast from Louisiana to northern Florida. Colder air moving in behind the storm spread over eastern United States. Record cold temperatures ensued. The coldest weather of the season moved into the northern portion of the Gulf Coast States. As the month ended, a warming trend began in the northern Rockies and Plains.

# HURRICANE IVAN

1 - 11 October 1980

National Hurricane Center  
Miami, Florida

Hurricane Ivan developed in rather an atypical fashion. Since late September, a cold low had been analyzed on synoptic charts off the southwest coast of Portugal. Lack of data rendered its precise location uncertain until 1 October, when it moved between the Azores and the Canary Islands and became better defined. At that time the low extended from the surface through the troposphere, clearly a cold-core system. Satellite pictures also showed cloud structure frequently observed in cold lows--cyclonic curvature of cloud bands at several levels with little convection near the circulation center.

However, the system, as observed by satellite, underwent a gradual transition during the next few days as the low moved slowly northwestward, then northward, and finally described an anticyclonic loop, 2 - 4 October. During this time, convective cloudiness around the center increased gradually, and on the 4th a clearly-defined circulation center could be seen within a concentrated convective area, thus satisfying the requirements for classification as a tropical system. But even at this juncture it was not possible to separate the surface system from the upper low. Within the accuracy of the respective analyses, the low at 200 mb appeared to be nearly directly above the surface low.

Ivan became a named tropical storm at 1600 GMT on the 4th, then increased to hurricane strength on the following day as it moved southwestward. Maximum wind increased to 90 kt as the hurricane's

path described a cyclonic loop on the 6th - 7th.

Thereafter Ivan moved generally west northwestward until the 9th, when it began a gradual turn towards the north northeast. On the 11th the hurricane merged with a large extratropical low and frontal system over the North Atlantic, as it accelerated northeastward and slowly weakened.

There were no clear-cut synoptic features at mid-tropospheric levels that were useful in predicting or explaining the path of Ivan during its early stages. The anticyclonic loop and southwestward movement described earlier were aided by a building high north of the storm. As the high to the north weakened, another high built southward to the east of the hurricane. This allowed Ivan to turn northward. Acceleration northeastward began as a strong extratropical cyclone approached from the west.

The dynamics of a development such as Ivan are not well understood. Sea-surface temperatures during formation were about 23°C and at no time did they exceed 25.5°C. The paths of the surface and 200 mb lows were very similar. Some outflow could be inferred at times from satellite movie loops. The apparent cirrus outflow, however, quickly was caught up in the peripheral flow and vanished.

There were no known casualties or damages associated with Ivan. No hurricane force winds were reported by ships, but a number reported winds of gale force.

# HURRICANE IVAN

PRELIMINARY BEST TRACK

HURRICANE IVAN

1-11 October 1980

DATE	TIME (GMT)	POSITION		PRESSURE (MB)	WIND (KT)	STAGE
		LATITUDE (°N)	LONGITUDE (°W)			
10/1	0000	33.6	20.0	1010	25	Extratropical
	0600	33.7	20.7			
	1200	33.8	21.5			
	1800	34.1	22.2			
10/2	0000	34.5	22.8			
	0600	35.0	23.3			
	1200	35.7	23.7			
	1800	36.5	23.8			
10/3	0000	37.2	23.5	1008	25	
	0600	37.8	23.1			
	1200	38.7	22.5			
	1800	38.5	21.4			
10/4	0000	37.7	21.8	1005		
	0600	37.0	22.7			
	1200	36.5	23.5			
	1800	35.6	24.6			
10/5	0000	34.4	25.7	996	50	Tropical Depression Tropical Storm
	0600	33.4	26.8			
	1200	32.4	28.3			
	1800	31.3	29.6			
10/6	0000	30.1	30.5	992	65	Hurricane
	0600	29.1	31.1			
	1200	28.4	31.3			
	1800	28.1	31.1			
10/7	0000	28.0	30.7	990	80	
	0600	28.5	30.6			
	1200	29.5	31.7			
	1800	29.8	32.7			
10/8	0000	30.0	34.4			
	0600	30.6	36.2			
	1200	31.3	37.4			
	1800	31.5	39.0			
10/9	0000	31.7	40.5			
	0600	32.3	41.0			
	1200	33.2	41.1			
	1800	33.8	41.2			
10/10	0000	34.9	40.7			
	0600	36.2	40.0			
	1200	37.8	39.1			
	1800	39.7	37.9			
10/11	0000	42.0	36.1	985	75	
	0600	44.4	34.1			
	1200	46.8	31.5			
	1800	49.7	27.5			
10/12	0000	52.5	24.5		60	Extratropical



## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

OCTOBER 1980

STATE	Temperature						Precipitation				
	Monthly extremes						Monthly extremes				
	Station	Highest °F	Date	Station	Lowest °F	Date	Station	Greatest In.	Station	Least In.	
Alabama	3 Stations	91	21	Hamilton 3 S	14	31	Bay Minette 3 NNW	9.29	Belle Mina 2 N	1.96	
Alaska	Klawock	88	12	Chandalar 1 NW	-15	30	Little Port Walter	52.25	Tok	.04	
Arizona	Gila Bend	114	2	Hawley Lake	3	17	Hawley Lake	3.64	19 Stations	.00	
Arkansas	Eureka Springs 3 WNW	94	2	Gilbert	15	30	Newport	7.91	Gravette	1.40	
California	Mecca Fire Station	117	2	White Mountain 2	6	17	Casquet Ranger Station	4.63	90 Stations	.00	
Colorado	2 Stations	96	24	Taylor Park	-5	24	Bonham Rav	3.65	14 Stations	.00	
Connecticut	Falls Village	91	15	Newport High Hill Pic	18	30	Mansfield Hollow Lake	5.31	Hartford-Brainard FLD	2.52	
Delaware	2 Stations	92	24	North Brainerd Farm	28	31	Bridgeville 1 NW	7.19	Wilmington WSO AP	3.99	
District of Columbia	1 Station	97	2	Smith Creek	-8	26	Fort Lauderdale	12.94	Everglades	.42	
Georgia	2 Stations	95	16+	2 Stations	-4	26+	Sapelo Island	7.09	Macon WSO AP	1.27	
Hawaii	Ala Moana Station, Honolulu	95	15	Mauna Loa Slope Obs	94	28+	Piikihua 89 A	20.40	13 Stations	.00	
Idaho	Lucille	90	7+	Mackay Ranger Station	0	24	Massacre Rocks St Pk	2.20	Arco 3 SW	T	
Illinois	1 Station	92	24	Mount Carroll	13	29	Joliet Brandon Rd Dam	3.79	Morrison	.93	
Indiana	Covington 4 SW	97	2	2 Stations	18	30	Princeton 1 W	3.71	Wheatfield 2 NNW	1.12	
Iowa	5 Stations	93	24	Chariton	11	29	Mount Ayr	1.58	Milford 4 NW	.64	
Kansas	1 Station	99	1	Lincoln 1 ESE	13	29	Lecompton	7.30	Richfield 1 NE	.00	
Kentucky	Hickman 1 E	92	9	Gray Hawk	18	31	Hickman 1 E	4.31	Barren River Lake	1.04	
Louisiana	7 Stations	92	11+	5 Stations	27	31+	Opelousas	11.39	Logansport 4 ENE	1.18	
Maine	2 Stations	72	24	West Buxton 2 NNW	15	25	Jonesboro	6.27	Brunswick	.11	
Massachusetts	Solomons	86	9	Oakland 1 SE	20	30	Salisbury FAA AP	8.64	Cumberland 2	2.07	
Massachusetts	Chester 2	83	17	Chester 2	8	24	Hatchville	7.71	Sunderland	2.02	
Michigan	2 Stations	91	24	Ironstone	4	29	Alma	4.4	Stephenson 6 W	.83	
Minnesota	Montevideo 1 SW	93	2	Tower 3 S	4	29	Theilman	3.76	Cedar	.51	
Mississippi	1 Station	92	10+	3 Stations	24	31	Hickory 1 E	9.12	Lambert 5 E	2.07	
Missouri	Festus 2 NW	97	8	Steelville 2 N	14	30	Candenton	7.37	Palmyra	1.72	
Montana	1 Station	94	2	Bozeman 12 NE	0	23	Shonkin 7 S	4.38	Manhattan	.14	
Nebraska	Greeley	90	7	Agate 3 E	8	24	Wahoo	5.30	2 Stations	T	
Nevada	Sunrise Manor Las Vegas	108	1	Rand Ranch Palisade	2	23	Owyhee	1.30	10 Stations	.00	
New Hampshire	4 Stations	75	24	Mount Washington	6	29	Mount Washington	96.41	Surry Mountain Lake	1.96	
New Jersey	Ions River	94	24	Long Valley	-3	31	Cape May 2 NW	6.02	Long Branch Oakhurst	3.11	
New Mexico	Hacienda	75	24	Angelina 1 E	5	24	Brazos Lodge	2.54	20 Stations	.00	
New York	Glenham	85	2	Old Forge	14	24	Hooker 4 N	9.50	Troy Lock and Dam 2	1.61	
North Carolina	2 Stations	98	24	Grandfather Mountain	20	26	Murfreesboro 2 W	7.02	Wilmington WSO AP	1.62	
North Dakota	2 Stations	89	1	Kenmare 1 WSW	7	27	Hague	4.25	Sherwood 3 N	.56	
Ohio	Ironton	89	11	Plymouth 2 WSW	15	30+	Ashtabula	5.65	Kenton	1.14	
Oklahoma	2 Stations	96	24	Beaker	16	30+	Quapaw	7.71	2 Stations	.00	
Oregon	2 Stations	104	14	Freemont	3	23	Ilwaco	7.09	Chemult	T	
Pennsylvania	Octoraro Lake	93	17	1 Station	16	24	Doylestown	6.90	Carrolltown 2 SSE	1.36	
Puerto Rico	San Sebastian 2 WNW	98	14	Verde Miravilla	57	7	Maricao Fish Hatchery	15.91	Borinquen AP	1.04	
Rhode Island	North Foster 1 E	77	17	Kingston	21	31	North Foster 1 E	5.27	Block Island WSO AP	3.18	
South Carolina	Hilton Head	97	11	Walhalla	27	26	Hogback Mountain	7.81	Andrews	1.24	
South Dakota	Usta 8 WNW	97	8	2 Stations	28	7	Stephan 1 ENE	4.63	Wilmot 1 ENE	.79	
Tennessee	3 Stations	91	10+	Centerville Water Pl	20	31	Union City	5.06	Newcomb	.83	
Texas	Rio Grande City 3 W	111	18	2 Stations	14	29	Beaumont City	11.37	18 Stations	.00	
Utah	Saint George	89	1	Uintalands	3	28	Geneva Steel 2	6.38	Midlake	.09	
Vermont	3 Stations	77	18+	Mount Mansfield	13	29	Mount Mansfield	6.18	Rutland	1.65	
Virginia	Stony Creek	93	12	4 Stations	21	31+	Stony Creek	7.60	Deerfield 1 S	.61	
Virgin Islands	Christiansted Fort	94	15	Alex Hamilton Fld FAA	68	8	2 Stations	8.53	Frederiksted	2.03	
Washington	2 Stations	91	24	Winthrop 1 WSW	12	27	Spruce	5.30	Chelan	.08	
West Virginia	2 Stations	86	10	Sennett State Forest	15	31	Thomas	3.95	East Rainelle 3 NNE	1.15	
Wisconsin	Superior	84	7	2 Stations	7	24+	Sparta	3.40	Wausaukee	.92	
Wyoming	Wolverine	91	5	Darwin Ranch	7	23	Seminole Dam	2.58	Lake Yellowstone	.12	

Case 1:88-cv-00080

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[illegible]



## CLIMATOLOGICAL DATA

METRIC UNITS

001066 1.8

State and Station	Pressure			Temperature					Precipitation					Wind				No. of days (sunrise to sunset)						
	Station ID	Sea level	Elevation (ground)	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	No. of days		Average dew point	Average relative humidity									
												Max 32.2 °C or above	Min. 0 °C or lower			Total	With thunderstorms	Maximum depth on ground						
																			Greatest in 24 hours	No. of days	Resultant speed	Resultant direction	Speed	Direction
m	mb	mb	C	C	C	C	C	C	C	C	C	mm	mm	mm	mm	m/s	m/s	m/s	m/s	°				
INDONESIA Jember Jember Jember Jember Jember Jember Jember Jember Jember Jember	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1				
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1				
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1				
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1				
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1				
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1				
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1				
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1				
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1				
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1				
INDONESIA Jember Jember Jember Jember Jember Jember Jember Jember Jember Jember	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1				
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1			
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1			
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1			
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1			
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1			
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1			
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1			
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1			
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1			
INDONESIA Jember Jember Jember Jember Jember Jember Jember Jember Jember Jember	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1			
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1	1		
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1	1		
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1	1		
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1	1		
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1	1		
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1	1		
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1	1		
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1	1		
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1	1		
INDONESIA Jember Jember Jember Jember Jember Jember Jember Jember Jember Jember	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1	1		
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1	1	1	
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1	1	1	
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1	1	1	
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1	1	1	
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1	1	1	
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1	1	1	
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1	1	1	
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1	1	1	
	984.5	1016.6	15.2	5.7	10.3	-1.7	27.8	1	-3.3	10	1	1	1	1	1	1	1	1	1	1	1	1	1	

## CLIMATOLOGICAL DATA

METRIC UNITS

State and Station	Elevation (ground)	Pressure		Temperature						Precipitation						Wind				No. of days (sunrise to sunset)										
		Station Q	Sea level	Average		Departure from normal	Highest	Date	Lowest	Date	Max 32° or above	Min. 0° or lower	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	No. of days 25 mm. or more	With thunderstorms			Total	Maximum depth on ground	Resultant speed	Resultant direction	Speed	Direction (1.6 kilometers)			
				C	F																									
				m	mb															C	F							C	F	C
MISSISSIPPI																														
MEMPHIS	86	1007.1	1016.4	24.5	76.1	-1.7	21.1	10	-0.1	31.1	0	1	11.1	76	17.7	11.7	6.0	6	4	0	0	0	7.4	16.2	7	27	19	7	11	4.3
MISSOURI																														
COLUMBIA REGIONAL	270	686.1	1017.6	16.5	61.7	-2.5	31.1	8	-3.0	29	0	5	74.4	50	11.0	2.9	4.1	5	5	1	1	1	2.9	14.0	5	27	17	6	6	3.6
KANSAS CITY	297	686.0	1017.1	14.1	57.4	-1.3	31.7	8	-1.1	26	0	5	74.4	50	10.2	2.9	4.1	5	5	1	1	1	2.9	14.0	5	27	17	6	6	3.6
KANSAS CITY - W. AP	224	686.0	1017.1	14.1	57.4	-1.3	31.7	8	-1.1	26	0	5	74.4	50	10.2	2.9	4.1	5	5	1	1	1	2.9	14.0	5	27	17	6	6	3.6
ST. LOUIS	167	997.3	1017.8	19.7	67.5	-1.8	31.3	8	-2.6	30	0	5	61.1	56	9.7	2.9	4.1	5	5	1	1	1	2.9	14.0	5	27	17	6	6	3.6
SPRINGFIELD	146	977.2	1017.9	21.4	70.5	-1.3	31.3	8	-2.6	30	0	5	61.1	56	10.1	2.9	4.1	5	5	1	1	1	2.9	14.0	5	27	17	6	6	3.6
NEBRASKA																														
OMAHA	108	897.7	1016.2	16.9	62.4	-0.7	31.7	7	-3.3	29	0	10	74.4	45	4.2	2.1	2.1	1	1	1	1	1	1.0	14.1	11	18	10	10	10	3.4
OMAHA - W. AP	696	815.3	1016.2	15.2	59.4	-0.7	31.7	7	-3.3	29	0	10	74.4	45	4.2	2.1	2.1	1	1	1	1	1	1.0	14.1	11	18	10	10	10	3.4
GREAT FALLS	1116	911.3	1016.0	15.7	59.3	-0.4	31.7	7	-3.3	29	0	10	74.4	45	4.2	2.1	2.1	1	1	1	1	1	1.0	14.1	11	18	10	10	10	3.4
HAY	789	925.5	1016.0	14.6	58.3	-0.4	31.7	7	-3.3	29	0	10	74.4	45	4.2	2.1	2.1	1	1	1	1	1	1.0	14.1	11	18	10	10	10	3.4
HELENA	1167	884.5	1021.6	14.4	57.9	-0.4	31.7	7	-3.3	29	0	10	74.4	45	4.2	2.1	2.1	1	1	1	1	1	1.0	14.1	11	18	10	10	10	3.4
SIOUX FALLS	604	915.7	1021.6	15.1	59.2	-0.4	31.7	7	-3.3	29	0	10	74.4	45	4.2	2.1	2.1	1	1	1	1	1	1.0	14.1	11	18	10	10	10	3.4
WHEELING	801	924.1	1017.7	15.0	59.0	-0.4	31.7	7	-3.3	29	0	10	74.4	45	4.2	2.1	2.1	1	1	1	1	1	1.0	14.1	11	18	10	10	10	3.4
WICHITA	672	909.2	1022.6	15.7	60.3	-0.4	31.7	7	-3.3	29	0	10	74.4	45	4.2	2.1	2.1	1	1	1	1	1	1.0	14.1	11	18	10	10	10	3.4
NEVADA																														
SEAR ISLAND	561	650.9	1017.4	16.6	61.9	-1.2	32.3	7	-3.7	29	0	12	74.4	55	2.7	1.6	1.6	2	2	1	1	1	1.1	16.5	22	16	17	4	8	3.7
LINCOLN	471	674.3	1017.2	17.4	63.3	-1.2	32.3	7	-3.7	29	0	12	74.4	55	2.7	1.6	1.6	2	2	1	1	1	1.1	16.5	22	16	17	4	8	3.7
NOBLES	471	661.1	1017.1	17.2	63.0	-1.2	32.3	7	-3.7	29	0	12	74.4	55	2.7	1.6	1.6	2	2	1	1	1	1.1	16.5	22	16	17	4	8	3.7
NORTH PLATTE	846	616.4	1017.6	16.9	62.4	-1.2	32.3	7	-3.7	29	0	12	74.4	55	2.7	1.6	1.6	2	2	1	1	1	1.1	16.5	22	16	17	4	8	3.7
OMAHA (EPPLEY)	298	616.4	1017.6	16.9	62.4	-1.2	32.3	7	-3.7	29	0	12	74.4	55	2.7	1.6	1.6	2	2	1	1	1	1.1	16.5	22	16	17	4	8	3.7
OMAHA (NORTH)	308	616.4	1017.6	16.9	62.4	-1.2	32.3	7	-3.7	29	0	12	74.4	55	2.7	1.6	1.6	2	2	1	1	1	1.1	16.5	22	16	17	4	8	3.7
SCOTTSDALE	1206	881.8	1018.1	19.5	67.1	-0.6	32.8	6	-3.2	28	0	7	49.1	62	8.7	6.1	6.1	4	4	1	1	1	1.1	16.5	22	16	17	4	8	3.7
VALLENTINE	789	627.5	1018.2	17.2	63.0	-1.3	32.8	6	-3.3	28	0	16	74.4	53	3.0	1.1	1.1	4	4	1	1	1	1.1	16.5	22	16	17	4	8	3.7
NEVADA																														
ELKO	1530	848.3	1020.1	20.8	69.4	-1.2	31.1	6	-10.6	27	0	16	74.4	55	5.1	4.1	4.1	3	3	0	0	0	0.4	12.5	26	12	18	7	6	3.4
ELY	1826	812.1	1019.3	18.2	64.8	-1.2	31.1	6	-10.6	27	0	16	74.4	55	5.1	4.1	4.1	3	3	0	0	0	0.4	12.5	26	12	18	7	6	3.4
LAS VEGAS	659	910.1	1019.2	18.2	64.8	-1.2	31.1	6	-10.6	27	0	16	74.4	55	5.1	4.1	4.1	3	3	0	0	0	0.4	12.5	26	12	18	7	6	3.4
RENO	1176	869.6	1019.9	21.0	69.8	-0.3	32.8	1	-1.7	28	0	16	74.4	55	5.1	4.1	4.1	3	3	0	0	0	0.4	12.5	26	12	18	7	6	3.4
WINNECOCA	1311	872.7	1020.6	21.3	70.3	-0.7	32.8	6	-1.6	28	0	16	74.4	55	5.1	4.1	4.1	3	3	0	0	0	0.4	12.5	26	12	18	7	6	3.4
NEW HAMPSHIRE																														
CONCORD	104	1001.7	1014.6	13.7	56.7	-2.3	22.2	1	-8.3	24	0	15	69	67	-1.1	3.3	3.3	4	4	0	0	1.2	23	15	26	6	9	16	6.4	
MT. WASHINGTON OBS	1909			-0.7	-32.0	-3.5	7.8	18	-14.4	25	0	27	124	214	5	40	40	23	1	475	127	0	0	15	26	6	9	16	6.4	
NEW JERSEY																														
ATLANTIC CITY	20	1013.5	1016.0	17.1	62.8	-2.4	22.9	2	-3.2	31	0	7	6.7	76	8.1	22	22	8	1	1	1	1.3	26	14	25	11	13	10	4.6	
ATLANTIC CITY U	20	1013.5	1016.0	17.1	62.8	-2.4	22.9	2	-3.2	31	0	7	6.7	76	8.1	22	22	8	1	1	1	1.3	26	14	25	11	13	10	4.6	
NEWARK	2	171.9	1016.0	17.3	63.1	-1.4	22.9	2	-3.2	31	0	0	5.6	65	9.6	31	66	6	6	0	0	2.0	29	19	25	7	14	8	5.6	
TRAFFORD	17			16.3	61.3	-1.3	25.0	17	1.7	31	0	0	5.6	65	9.6	31	66	6	6	0	0	2.0	29	19	25	7	14	10	5.7	
NEW MEXICO																														
ALBUQUERQUE	1619	840.8	1017.5	21.3	70.3	-2.1	32.2	1	-3.9	29	0	14	41	2	-1.1	2	2	2	0	1	1	0.6	14	17	10	23	4	4	2.4	8.6
CLETON	1515			20.8	69.4	-0.3	30.0	5	-8.1	24	0	8	5	50	1	-3.1	1	0	2	1	1	0.5	22	12.1	15	23	4	4	2.3	7.7
DOUGLAS	1112	892.3	1014.7	22.0	71.6	-0.9	31.1	1	-3.9	29	0	5	5	50	1	-3.1	1	0	2	1	1	0.5	22	12.1	15	23	4	4	2.3	7.7
NEW YORK																														
ALBANY	104	1004.4	1015.2	14.2	57.6	-2.2	31.7	17	-7.2	28	0	9	17	64	5.8	3.1	3.1	0	0	0	1.7	23	13.9	13	26	6	9	16	6.5	
BINGHAMTON	485	956.0	1015.4	14.2	57.6	-2.2	31.7	17	-7.2	28	0	9	17	64	5.8	3.1	3.1	0	0	0	1.7	23	13.9	13	26	6	9	16	6.5	
RUFFALO	215	988.8	1014.8	12.8	57.0	-1.9	28.1	17	-4.4	27	0	3	7	76	11.0	2.1	2.1	3	3	1	1	2.5	24	13.4	14					



## 007086 198

[illegible]



# CLIMATOLOGICAL DATA

METRIC UNITS

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State and Station	Elevation (ground)	Pressure		Temperature										Precipitation					Wind			No. of days (sunrise to sunset)		Sky cover, tenths (sunrise to sunset)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
		Station	Sea level	Average maximum		Average minimum		Average		Departure from normal		Date		No. of days		Average dew point		Total	Departure from normal		Greatest in 24 hours				No. of days		Snow, ice pellets	Fastest mile (1.6 kilometers)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
m	mb	mb	mb	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C

## CLIMATOLOGICAL DATA

METRIC UNITS

OCTOBER 198

State and Station	Elevation (ground)	Pressure		Temperature										Precipitation										Wind				No. of days (sunrise to sunset)		Sky cover, tenths (sunrise to sunset)
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max 32° or above	Min. 0° or lower	No. of days	Total	Departure from normal	Greatest in 24 hours	25 mm. or more	With thunderstorms	Total	Maximum depth on ground	Residual speed	Residual direction	Speed	Direction	Date				
VERMONT STATION VERMONT VER																														

## (Base 65°F.)

CC706ED , 48'

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# COOLING DEGREE DAYS

(Base 65°F.)

OCTOBER 198

State and station	Current season			State and station	Current season			State and station	Current season			State and station	Current season		
	This month	Period January through this month	Normal January through this month		This month	Period January through this month	Normal January through this month		This month	Period January through this month	Normal January through this month		This month	Period January through this month	Normal January through this month
ALABAMA				HAWAII				NEBRASKA				SOUTH CAROLINA			
BIRMINGHAM	18	2223	2212	HIL	71	3104	2606	GRAND ISLAND	9	1349	1036	CHARLESTON	87	2139	2068
FLORENCE	48	2223	1928	HONOLULU	476	3943	3606	LINCOLN	1	1497	1148	CHARLESTON U	123	2575	2127
MONTGOMERY	28	1813	1608	KANAHU	486	3943	3187	NORFOLK	5	1214	925	COLUMBIA	18	1962	2082
MOBILE	18	1813	2751	KAHOLA	486	3943	3180	NORTH PLATTE	0	1054	881	DENVILLE	16	1737	1877
MONTGOMERY	48	1813	2232					OPAMA (EPPELY)	0	1264	1117				
				ICAHU				OPAMA (NORTH)	11	1310	940				
				KAHOLA	2	104	714	SCOTTSPUFF	1	1044	668	SOUTH DAKOTA			
				KAHOLA	1	114	657	VALENTINE	4	988	736	AGRODEEN	5	603	566
				POCATELLO	1	221	417					MURON	10	757	711
												PAPID CITY	14	667	661
												SIOUX FALLS	6	799	719
				ILLINOIS				NEVADA							
				CAIRO U	53	2179	1806	FOUC	0	381	342				
				CHICAGO O HARE	1	1000	904	FOX	0	381	207	TENNESSEE			
				PEORIA	1	1196	968	LAKE VIKAR	211	3142	2940	BRISTOL	5	1002	1107
				ROCKFORD	1	1196	714	DEWE	1	397	329	CHATTANOOGA	10	1603	1431
				SPRINGFIELD	1	1402	1114	WINNEMUCCA	2	465	407	KNOXVILLE	12	1319	1184
								NEW HAMPSHIRE				MEMPHIS	80	2764	2027
				INDIANA				CONCORD	0	458	349	NASHVILLE	44	1947	1884
				EVANSVILLE	39	1827	1764	MT WASHINGTON OBS	0			OAK RIDGE	13	1572	1367
				INDIANAPOLIS	1	1177	874								
				SOUTH BEND	1	1018	695	NEW JERSEY							
								ATLANTIC CITY	6	773	684				
				TEXAS				ATLANTIC CITY U	2	878	835				
				DES MOINES	1	1067	928	TRENTON U	10	1365	1204	ARLINGTON	117	2875	2457
				ELBUQUE	0	1067	928					ARLINGTON	2	1698	1433
				SIOUX CITY	4	1069	932					ARLINGTON	182	3173	2875
				WATERLOO	1	1069	675					ARLINGTON	309	4011	3669
												CORPUS CHRISTI	247	3396	3359
				KANSAS				NEW MEXICO				DALLAS FT WORTH	117	3234	2576
				CONCORDIA	2	1767	1302	ALBUQUERQUE	15	1526	1114	EL PASO	233	3620	3341
				ODGE CITY	56	2067	1411	EL PASO	7	1168	717	FL PASO	63	2884	2098
				GOODLAND	0	1024	925	EL PASO	7	1168	717	GILFESTON	228	2941	2927
				TOPEKA	9	1829	1671	ROSWELL	21	2034	1560	HOUSTON INTERCON	162	3265	2844
				WICHITA	52	2357	1673					LURBOCK	44	2166	1647
								NEW YORK				WYLAND	33	1188	2245
				WEST VIRGINIA				ALBANY	0	583	574	PORT ARTHUR	152	2978	2751
				COVINGTON	1	1183	1067	BINGHAMTON	1	532	789	SAN ANGELO	90	2599	2689
				LEXINGTON	17	1370	1147	RUFFALO	2	677	437	SAN ANTONIO	245	3364	2967
				LOUISVILLE	31	1718	1268	NEW YORK U	11	1435	1068	VICTORIA	202	3364	3074
								NEW YORK LA GUARDIA	8	1294	1068	WICHITA FALLS	126	3056	2847
				LOUISIANA				ROCHESTER	2	744	531				
				PAISON ROUGE	75	2666	2563	SYRACUSE	1	706	551	UTAH			
				LAKE CHARLES	108	2697	2699					MILFORD	3	596	688
				NEW ORLEANS	108	3155	2663	NORTH CAROLINA				SALT LAKE CITY	8	478	927
				SHREVEPORT	108	2851	1024	ASHEVILLE	4	1191	872				
								CARP MATTERS R	4	1723	1547	VERMONT			
				MAINE				CHARLOTTE	76	1763	1596	BURLINGTON	0	509	741
				CARIBOU	0	194	129	PALEIGH	38	1401	1394				
				PORTLAND	0	488	252	WILMINGTON	17	2223	1958	VIRGINIA			
				MARYLAND								LYNCHBURG	18	1388	1107
				ALTIMORE	17	1408	1108	NORTH DAKOTA				NORFOLK	45	1430	1441
								RISHAPCK	0	502	487	RICHMOND	23	1728	1353
				MASSACHUSETTS				WILLISTON	1	562	473	ROANOKE	13	1300	1088
				BLUE HILL OBS R	1	107	457					WALLOPS ISLAND	14	1190	1107
				ROSTON	1	916	681	OHIO							
				WORCESTER	1	407	767	AKRON	0	765	634	WASHINGTON	2	45	11
								CINCINNATI ABBE OB	6	1454	1148	OLYMPIA	2	45	11
				MICHIGAN				CLEVELAND	3	705	418	QUILLAYUTE	1	73	183
				ALPENA	0	118	208	COLUMBUS	3	1034	809	SEATTLE-TACOMA	2	54	119
				DETROIT	5	933	743	CANTON	4	1130	816	SPOKANE	3	227	368
				DETROIT METRO	0	106	654	MANSFIELD	1	711	418	STAMPEDE PASS R	22	691	862
				FLINT	0	476	438	TOLEDO	4	772	685	WALLA WALLA U	22	691	862
				GRAND MARIE	0	661	575	YOUNGSTOWN	2	486	518	WASHINGTON	2	45	11
				HUGHSON LAKE	0	100	250	OKLAHOMA				WEST VIRGINIA			
				LANSING	0	631	1054	OKLAHOMA CITY	66	2541	1876	CHARLESTON	2	112	49
								TULSA	69	2871	1849	ELKINS	2	113	389
				MISSISSIPPI				OREGON				WANTINGTIN	11	1310	1098
				JACKSON	52	2849	2708	ASTORIA	9	28	13	PARKERSBURG U	5	1074	1045
				MERIDIAN	45	2849	2224	PURNS U	2	94	269				
								EUGEN	12	142	239	WISCONSIN			
				COLUMBIA REGIONAL	17	1444	1708	MEDFORD	35	522	562	GREEN BAY	0	492	784
				KANSAS CITY	15	1746	1285	FRANKLTON	70	417	656	LA CROSSE	0	1084	695
				ST JOSEPH	10	1593	1124	PORTLAND	12	266	302	MADISON	1	629	460
				ST LOUIS	31	1662	1475	SEXTON SUMMIT R	56	170	137	WILKINSON	1	484	457
				SPRINGFIELD	27	1408	1382								
								PACIFIC AREA							
				WENTAKE				GUAM TAGUAC R	465	4292	4166	CASPER	0	410	458
				WILLIAM	26	675	449	JOHNSTON	528	4820	4284	FAIRBANKS	0	408	721
				LA FOL	7	400	438	WALJALEIN	545	5079	4996	LANOFR	0	424	881
				CREAT FALLS	18	704	339	WALJALEIN	545	5079	4996	SHERIDAN	1	338	446
				HAVER	11	329	395	PAGO PAGO	465	4834	4413				
				HELENA	0	161	256	PONAPE P	515	5143	4715				
				KALISPELL	0	63	117	TRUK MOEN ISLAND	483	5078	4894				
				MILES CITY	12	776	752	WAKE	400	4441	4571				
				MISSOULA	0	125	188	YAP R	408	4930	4925				
								PENNSYLVANIA							
								ALLENTOWN	6	1207	772				
								EPIC	4	551	373				
								HARRISBURG	3	1045	1025				
								PHILADELPHIA	10	1435	1104				
								PITTSBURGH	2	85	647				
								SCRANTON	3	85	658				
								WILLIAMSPORT	2	878	698				
								RHODE ISLAND							
								BLOCK ISLAND	1	564	359				
								PROVIDENCE	1	811	777				

## STORM SUMMARY

OCTOBER 1980

STATE	TORNADOES					HAILSTORMS				WINDSTORMS				LIGHTNING				@HEAVY SNOWSTORMS AND BLIZZARDS				# ICE STORMS				* ALL OTHER			
	NUMBER	DAYS	DEATHS	INJURIES	† DAMAGE	DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE	
								PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS								
Alabama																3													
Alaska												2																	
Arizona	*																												
Arkansas		4	1	1												4													
California	*																												
Colorado		1	1		4					1		7																	
Connecticut												7																7	
Delaware												7																	
Florida		2																											
Georgia																4													
Hawaii	*																				4								
Idaho																													
Illinois	*																												
Indiana	*																												
Iowa		1	1																		4								
Kansas		4	2		6			5								4													
Kentucky	*																												
Louisiana		4	3		5																						4	4	
Maine																													
Maryland & DC																										3	6	4	
Massachusetts											4																		
Michigan																												5	
Minnesota													3																
Mississippi	1	2		8																									
Missouri																													
Montana																					2								
Nebraska		8	2							1	1	6	3																
Nevada	*																												
New Hampshire										1	4	2	2															6	
New Jersey																													
New Mexico	*																												
New York																										1	4		
North Carolina		1	1																									2	
North Dakota																									5				
Ohio	*																												
Oklahoma		1	1		5																								
Oregon															2	2	2												
Pennsylvania	*																												4
Puerto Rico	*																												



## Average monthly values

WCTCMEF 1722

ALBANY, NY 1005 MB										ALBANY, NY 891 MB										ALBANY, NY 893 MB										ALBANY, NY 997 MB										ALBANY, NY 1010 MB									
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Resultant Wind Speed m.p.h.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Resultant Wind Speed m.p.h.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Resultant Wind Speed m.p.h.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Resultant Wind Speed m.p.h.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg.	Resultant Wind Speed m.p.h.																			
5FC	1	8.6	5.7	2.9	22	1.4	31	1.1, 1.9	-6.6	-2.4	07	1.4	31	1.1, 1.9	-7.8	-2.7	26	1.4	31	1.1, 1.9	-7.8	-2.7	26	1.4	31	1.1, 1.9	-7.8	-2.7	26	1.4																			
1000	1	8.6	5.7	2.9	22	1.4	31	1.1, 1.9	-6.6	-2.4	07	1.4	31	1.1, 1.9	-7.8	-2.7	26	1.4	31	1.1, 1.9	-7.8	-2.7	26	1.4	31	1.1, 1.9	-7.8	-2.7	26	1.4																			
950	1	551	5.0	1.5	1.5	2.6	1.4	551	5.0	1.5	1.5	2.6	1.4	551	5.0	1.5	1.5	2.6	1.4	551	5.0	1.5	1.5	2.6	1.4	551	5.0	1.5	1.5	2.6																			
900	1	992	3.3	-1.7	27	6.7	1.4	992	3.3	-1.7	27	6.7	1.4	992	3.3	-1.7	27	6.7	1.4	992	3.3	-1.7	27	6.7	1.4	992	3.3	-1.7	27	6.7																			
850	1	1,453	1.7	-4.2	27	9.7	1.4	1,453	1.7	-4.2	27	9.7	1.4	1,453	1.7	-4.2	27	9.7	1.4	1,453	1.7	-4.2	27	9.7	1.4	1,453	1.7	-4.2	27	9.7																			
800	1	1,899	-1.2	-8.3	27	11.0	31	2,070	-3.1	-2.4	16	2.2	31	2,016	10.0	-4.8	29	5.4	31	1,804	-5.6	-6.1	14	6.4	31	1,878	-7.7	-7.1	19	13.1																			
750	1	2,452	-2.2	-13.4	27	12.4	31	2,562	-4.7	-5.2	26	2.6	31	2,550	-6.9	-6.9	14	5.4	31	2,308	-10.6	-11.4	14	9.0	31	2,452	-9.3	-9.7	20	14.1																			
700	1	2,990	-4.4	-15.4	27	12.5	31	3,125	-7.9	-9.2	27	2.6	31	3,125	-10.8	-10.8	12	9.0	31	2,995	-14.1	-14.8	14	9.0	31	2,995	-14.1	-14.8	14	12.1																			
650	1	3,578	-7.1	-19.2	27	16.8	31	3,721	-12.4	-13.4	29	4.8	31	3,708	-15.6	-15.6	26	4.8	31	3,405	-20.1	-21.1	14	9.7	31	3,572	-20.9	-17.1	11	12.1																			
600	1	4,191	-10.1	-23.1	27	19.1	31	4,356	-4.7	-18.7	30	4.8	31	4,343	-4.6	-16.1	27	4.7	31	4,007	-18.6	-23.1	16	9.3	31	4,186	-13.0	-20.9	21	13.2																			
550	1	4,862	-13.4	-26.4	26	22.7	31	5,035	-9.1	-23.4	25	5.8	31	5,023	-8.7	-24.6	28	6.1	31	4,540	-22.4	-29.4	16	10.0	31	4,884	-17.3	-24.7	22	13.6																			
500	1	5,579	-18.4	-30.4	25	25.4	31	5,861	-31.8	-29.4	29	5.8	31	5,754	-13.6	-29.1	27	8.1	31	4,342	-27.8	-34.1	16	9.8	31	5,552	-22.0	-30.6	22	14.6																			
450	1	6,356	-23.4	-36.4	26	28.6	31	6,557	-18.1	-33.8	29	6.4	31	6,481	-19.1	-34.4	28	9.7	31	4,691	-33.4	-39.4	17	10.1	31	6,318	-27.7	-35.5	22	15.4																			
400	1	7,205	-30.2	-43.1	26	31.1	31	7,482	-25.8	-41.1	30	1.8	31	7,413	-25.6	-39.6	26	10.9	31	4,788	-39.4	-48.1	17	10.5	31	7,155	-38.1	-46.8	22	15.4																			
350	1	8,146	-36.1	-46.0	24	33.4	31	8,379	-33.0	-47.0	31	6.1	31	8,370	-32.4	-45.7	28	11.8	31	4,811	-45.9	-51.9	18	11.8	31	8,083	-39.8	-47.2	23	19.0																			
300	9	9,197	-47.5	-51.7	26	29.6	31	9,444	-40.8	-51.2	30	7.8	31	9,433	-40.9	-51.8	28	11.7	30	8,622	-50.9	-56.9	19	13.9	30	9,119	-46.4	-50.9	23	19.2																			
250	25	10,414	-48.0		27	31.6	30	10,670	-48.7		31	7.8	31	10,652	-48.4		28	13.8	30	11,004	-51.5		19	14.1	30	10,316	-51.0		23	18.5																			
200	1	11,870	-52.4		26	31.3	31	12,134	-53.4		29	1.8	31	12,097	-53.8		28	16.4	31	11,661	-56.5		20	12.9	31	11,758	-53.7		24	16.6																			
175	20	12,731	-54.1		26	29.8	30	12,961	-58.3		29	13.7	31	12,941	-59.1		27	16.9	30	12,337	-60.9		15	20.7	30	12,614	-58.4		25	15.8																			
150	20	13,714	-56.5		26	27.0	30	13,924	-61.1		29	14.2	31	13,901	-61.4		28	17.8	30	13,351	-64.6		21	11.0	29	13,596	-54.4		24	11.7																			
125	29	14,887	-58.1		27	21.8	30	15,046	-64.9		29	13.1	31	15,022	-64.7		28	15.2	30	14,547	-69.3		20	10.8	24	14,767	-55.4		24	11.7																			
100	20	16,270	-59.5		26	16.1	31	16,402	-66.1		29	10.1	31	16,188	-65.9		29	11.8	30	16,010	-69.7		21	8.7	27	16,196	-55.8		23	9.5																			
75	17	17,671	-58.2		30	13.7	30	17,757	-65.3		29	8.5	31	17,736	-64.7		29	7.8	30	17,471	-69.7		21	7.8	26	17,617	-54.8		23	6.1																			
50	27	18,513	-57.0		26	10.1	31	18,571	-64.8		29	6.1	31	18,548	-64.8		28	7.4	30	18,340	-70.2		21	6.3	27	18,513	-54.8		23	3.7																			
25	20	19,484	-57.9		26	8.0	31	19,571	-62.7		30	2.8	31	19,503	-62.4		29	3.1	30	19,350	-58.9		21	5.6	26	19,451	-56.2		23	3.7																			
0	20	20,636	-57.2		26	3.0	31	20,648	-60.1		28	2.5	31	20,633	-60.5		28	3.5	30	20,536	-51.6		22	4.8	1	20,609	-56.4		24	2.1																			
40	20	22,044	-57.6		26	4.4	30	22,044	-64.8		27	3.6	31	22,030	-65.5		26	3.9	29	21,988	-51.8		23	3.9	24	22,027	-55.9		30																				
30	27	23,086	-58.4		27	8.6	29	23,067	-58.1		27	5.4	30	23,063	-55.4		27	7.4	29	23,051	-51.7		26	2.9	23	23,051	-55.6		36	2.1																			
20	25	24,454	-53.7		27	9.7	27	24,408	-60.8		27	6.7	29	24,418	-59.7		27	7.9	27	24,379	-52.4		27	5.1	23	24,415	-55.8		36	2.1																			
10	20	26,494	-51.9		27	12.5	25	26,491	-51.1		27	9.7	26	26,460	-50.4		27	10.1	27	26,477	-53.1		30	4.9	22	26,446	-55.5		35																				
5	23	28,384	-49.6		27	18.2	22	28,354	-49.1		27	13.4	27	28,343	-48.5		26	13.2	23	28,318	-53.8		32	7.3	19	28,290	-56.0		35	6.1																			
1	11	31,110	-46.8		27	23.1	14	31,062	-46.9		27	17.1	24	31,019	-46.4		26	28.1	11	31,042	-55.0		32	15.6	6	30,961	-54.9																						



Average monthly values

OCTOBER 1960

CENTREVILLE, AL 1001 MB												CHARLESTON, SC 1016 MB												CHATHAM, MA 1014 MB												CHIHUAHUA, MEXICO 860 MB											
Standard pressure		No of observations		Dynamic height		Temperature °C		Dew Point °C		Resultant Wind		No of observations		Dynamic height		Temperature °C		Dew Point °C		Resultant Wind		No of observations		Dynamic height		Temperature °C		Dew Point °C		Resultant Wind																	
surface mb	ft	ft	m	meters	meters	°C	°F	°C	°F	Direction	Speed in mph	Direction	tens of deg.	Speed in mph	Direction	tens of deg.	Speed in mph	Direction	tens of deg.	Speed in mph	Direction	tens of deg.	Speed in mph	Direction	tens of deg.	Speed in mph	Direction	tens of deg.	Speed in mph																		
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	36	1.3	30	16	9.9	6.9	28	1.0	31	1,428	10.4	6.4	25	-5																
1000	3281	1	191	-2.6	-1.1	26	1.4	1	140	11.1	9.1	02	-7	31	13	14.1	11.8	3																													

* GULF BAY, FL 980 MB										DAYTON, OH 960 MB										DEL RIO, TX 981 MB										DENVER, CO 840 MB										DESERT ROCK, NV 903 MB									
580	31	3.0	1.1	25	1.7	31	299	9.9	2.6	24	-6.3	31	314	16.4	10.8	11	1.6	30	1,611	5.8	-4.5	20	1.5	30	1,007	13.6	-6.2	06	1.1	1.9																			
1000	13	3.4	1.7	20	2.8																																												
950	31	4.0	1.8	-6.3	1.1	31	569	7.6	1.6	26	2.8	31	587	18.0	9.9	15	3.7																																
900	31	4.0	-1.4	-3.7	1.3	1.7	31	1,014	6.5	-4.3	28	6.7	31	1,048	15.9	5.7	17	4.1																															
850	31	1.0	-7.1	-7.1	3.1	1.6	31	1,482	4.8	-4.9	28	7.9	31	1,532	13.7	2.0	18	3.3																															
800	31	1,775	-17.1	-12.4	28	1.9		1,075	3.1	-8.5	28	7.6	31	2,041	11.4	-1.3	20	4.1																															
750	31	2,276	-17.0	-17.2	2.4	3.1	3.4	2.5	-12.1	28	11.0	31	2,576	3.7	-7.2	2.6	3.0																																
700	31	2.4	-13.4	-22.5	27	3.0	3.1	0.06	-2.3	-14.2	28	12.8	31	3,146	5.5	-7.2	25	3.7																															
650	31	3.36	-16.7	-25.6	4	3.8	3.1	1.63	-5.5	-18.0	26	14.2	31	3,747	1.7	-10.7	26	5.4																															
600	31	3.4	-20.1	-30.2	25	4.4	3.1	4.255	-8.6	-22.8	28	16.1	31	4,388	-2.3	-14.9	26	7.4																															
550	31	4.0	-23.4	-34.0	24	5.6	3.1	4.925	-12.3	-26.8	28	17.0	31	5,174	-6.4	-21.8	25	10.5																															
500	31	5,292	-28.7	-39.2	24	7.5	3.1	5.647	-16.7	-31.5	28	19.1	31	5,815	-10.0	-28.4	26	12.2																															
450	31	6,038	-33.9	-41.7	29	6.3	3.1	6.471	-16.8	-32.8	28	21.1	31	6,618	-11.1	-25.5	26	14.0																															
400	31	6.4	-39.4	-45.7	25	9.9	3.1	7.287	-28.1	-42.1	27	24.4	31	7,499	-22.3	-35.6	25	16.3																															
350	31	7.7	-45.6		24	11.7	3.1	8.235	-34.8	-46.2	27	26.5	31	8,465	-29.4	-42.0	25	19.3																															
300	31	8.771	-50.1		25	13.8	3.1	9.291	-42.1	-51.7	27	28.6	31	9,544	-37.5	-48.8	25	22.7																															
250	31	9.667	-49.5		25	13.8	3.1	10.506	-48.7		27	29.0	31	10,780	-45.9		25	27.5																															
200	31	11.4	-48.2		26	14.2	3.1	11,954	-54.5		27	30.4	31	12,236	-54.8		26	29.6																															
150	31	12,310	-48.2		25	12.7	3.1	12,404	-56.5		27	30.8	31	13,080	-58.9		26	28.6																															
100	31	13.3	-48.1		25	11.9	3.1	12,777	-56.6		27	24.4	31	14,031	-65.0		26	25.2																															
75	31	14,526	-48.3		25	10.5	3.1	14,915	-61.1		27	21.8	31	15,133	-69.3		26	19.1																															
50	31	15,955	-48.9		25	8.4	2.6	16,301	-61.0		27	17.1	29	16,459	-71.3		27	12.0																															
25	31	17,459	-49.2		24	6.8	2.6	17,688	-60.4		27	13.3	25	17,783	-69.5		28	5.4																															
0	31	18,374	-50.0		23	5.7	2.6	18,530	-59.9		27	10.3	29	18,587	-66.2		28	2.9																															
30	31	19,374	-50.8		24	5.0	2.6	19,495	-59.7		26	8.0	26	19,528	-63.3		19	1.4																															
55	31	20,528	-51.4		24	4.3	2.6	20,646	-58.4		26	6.0	26	20,681	-60.2		11	1.1																															
80	31	21,976	-51.8		21	1.6	21	22,057	-57.1		26	4.2	26	22,056	-58.0		11	1.1																															
105	31	23,884	-51.4		10	1.1	20	23,886	-54.7		26	6.8	28	23,886	-54.0		25	5.5																															
130	31	25,004	-51.0		09	1.9	1.6	25,071	-52.9		27	8.8	28	25,062	-52.4		03	7																															
155	31	26,981	-50.9		06	2.5	17	26,926	-50.4		26	8.7	27	26,512	-49.4		11	1.0																															
180	31	28,361	-50.7		04	4.4	15	28,418	-49.3		27	12.9	25	28,413	-47.1		27	8.1																															
205	31	31,004	-49.8		32	3.7	11	31,073	-48.5		27	21.1	17	31,023	-49.7		28	4.0																															
230	31	33,414	-49.2		4	3.5	14.4																																										

LODGE CITY, KS 926 MB										EL PASO, TX 885 MB										ELY, NV 812 MB										EMPALME, MEXICO 1011 MB										* FAIRBANKS, AK 988 MB									
5FC	31	791	8.4	.4	29	1.0	31	1,193	10.2	4.0	34	.7	31	1,998			-9.6	19	3.0	31	12	21.4	14.5	35	.7	31	135	-1.5	-5.2	05	7.9																		
1000																																																	
950																																																	
900	31	1,029	13.0	.2	31	1.4																																											
850	31	1,508	11.5	-3.1	30	2.5	31	1,529	12.9	1.7	21	.6																																					
800	31	2,013	9.6	-6.2	30	3.4	31	2,037	10.5	-1.2	23	1.5	30	2,053	6.4	-5.4	19	2.8	31	2,036	14.1	2.5	18	1.4	31	1,816	-4.6	-11.4	17	4.6																			
750	31	2,544	7.5	-9.4	30	5.1	31	2,571	8.7	-4.1	25	1.8	31	2,563	7.0	-6.8	27	.2	31	2,577	10.0	-1.5	19	1.7	31	2,332	-1.7	-14.9	18	7.6																			
700	31	3,116	2.2	-11.2	30	5.4	31	3,135	3.7	-7.7	26	2.5	30	3,126	3.6	-6.6	28	1.3	31	3,148	9.9	-6.2	25	2.3	31	2,857	-10.5	-17.9	18	6.6																			
650	31	3,649	-4.7	-15.9	30	7.0	31	3,734	.3	-14.2	26	4.1	31	3,724	.4	-13.4	28	3.7	31	3,753	3.4	-10.6	26	3.0	31	3,424	-14.5	-21.1	18	7.1																			
600	31	4,181	-5.8	-19.4	30	8.0	31	4,371	-3.6	-19.5	26	4.8	31	4,360	-4.8	-18.0	27	3.9	31	4,398	-3.3	-16.0	27	4.5	31	4,026	-18.6	-25.0	18	8.0																			
550	31	4,760	-9.9	-25.1	29	8.6	31	5,052	-7.7	-24.5	27	6.6	31	5,041	-8.4	-22.5	27	5.2	31	5,089	-4.5	-21.0	27	5.7	31	4,669	-23.0	-29.7	18	8.8																			
500	31	5,336	-14.7	-30.7	28	9.7	31	5,788	-12.4	-29.9	27	8.2	31	5,774	-13.4	-26.9	28	5.7	31	5,833	-9.4	-26.1	27	7.7	31	5,360	-28.2	-36.5	18	9.4																			
450	31	6,520	-20.6	-36.0	28	10.4	31	6,584	-18.7	-34.6	26	16.1	28	6,569	-20.8	-31.6	28	5.3	31	6,634	-26.8	-33.0	27	8.4	31	6,088	-34.5	-41.6	18	9.8																			
400	31	7,160	-27.1	-41.4	28	11.4	31	7,453	-24.9	-39.7	27	14.4	30	7,434	-25.2	-38.1	28	6.3	31	7,518	-27.7	-35.5	27	11.0	31	8,924	-39.7	-44.4	18	10.6																			
350	31	7,814	-34.1	-46.4	28	12.4	31	8,413	-31.4	-46.5	27	12.0	30	8,390	-33.9	-43.8	28	7.1	31	8,491	-28.6	-40.9	27	14.0	31	7,828	-45.9	-51.9	18	11.3																			
300	30	9,185	-42.4	-52.0	28	12.4	31	9,465	-39.7	-51.8	27	15.5	30	9,451	-41.7	-50.2	28	7.9	31	9,574	-36.5	-47.8	27	18.1	31	8,837	-51.7	-57.9	19	12.4																			
250	30	10,601	-49.4		28	14.6	31	10,713	-47.1		27	15.6	30	10,665	-49.8			28	8.9	31	10,816	-46.9		27	22.8	30	10,009	-53.2		19	13.4																		
200	30	12,443	-55.8		28	17.3	31	12,167	-54.3		27	17.5	29	12,105	-56.1			30	9.4	31	12,277	-54.0		26	24.9	30	11,453	-50.8		20	11.8																		
150	30	12,867	-58.6		28	17.5	31	12,818	-59.1		27	18.2	28	12,958	-59.1			30	10.3	31	13,125	-59.3		24	24.2	30	12,325	-50.2		20	11.4																		
100	30	13,650	-60.4		28	17.2	31	13,976	-62.4		27	18.0	28	13,920	-61.4			29	10.0	31	14,078	-64.5		26	21.4	30	13,333	-50.2		20	10.6																		
50	30	14,974	-62.8		28	15.2	31	15,092	-66.2		28	15.5	28	15,044	-63.8			29	10.4	30	15,174	-68.6		27	18.0	30	14,527	-49.6		20	9.5																		
10	30	16,354	-67.8		28	11.9	31	16,435	-68.3		28	11.2	28	16,405	-65.4			30	9.1	30	16,500	-71.1		28	9.7	29	15,987	-49.8		21	8.7																		
0	30	17,719	-61.8		29	7.5	31	17,779	-67.1		28	4.3	27	17,767	-64.0			30	4.6	30	17,823	-69.2		28	3.1	29	17,446	-50.2		21	7.7																		
70	28	16,543	-62.6		29	6.1	30	16,590	-66.4		24	2.1	27	18,587	-62.9			30	4.4	30	18,627	-65.8		36	3.5	29	18,317	-50.7		22	7.1																		
60	27	19,453	-61.1		29	5.4	31	19,537	-62.1		28	1.2	26	19,533	-62.1			32	2.5	29	19,577	-62.9		34	2.9	19	19,125	-50.7		23	6.6																		
50	28	20,635	-60.5		24	4.7	30	20,667	-59.8		24	.9	26	20,646	-60.7			31	2.4	30	20,704	-59.5		11	2.8	29	20,502	-52.0		23	5.6																		
40	26	22,040	-58.2		28	4.2	28	22,069	-57.4		26	1.6	25	22,053	-59.8			32	2.3	29	22,109	-56.8		11	2.3	29	21,947	-52.5		25	5.1																		
30	25	23,411	-56.2		27	6.9	27	23,988	-54.5		31	1.7	21	23,871	-57.4			29	4.6	27	23,951	-53.5		08	1.6	27	23,805	-52.8		27	4.9																		
20	24	25,026	-54.5		27	8.6	25	25,076	-51.8		28	2.7	21	25,024	-55.3			28	6.7	25	25,135	-51.0		08	4.8	25	24,986	-53.4		28	6.0																		
10	25	26,466	-51.4		27	12.7	26	26,533	-49.2		26	3.4	16	26,465	-53.5			27	8.5	22	26,603	-47.7		19	3.0	21	26,414	-54.9		29	8.7																		
0	26	28,333	-49.8		26	15.3	26	28,433	-46.7		27	5.2	14	28,318	-51.3			27	12.7	27	28,362	-44.5		09	3.1	19	28,262	-45.1		29	12.9																		
0	1	11,411	-46.0		24	2.4	24	11,454	-46.7		26	1.0	1	11,427	-46.7						5	10,823	-55.7																										

## Average monthly values

[illegible]



## Average monthly values

OCTOBER 1980

MEXICO, MEXICO										MIDLAND, TX										MONTERREY, MEXICO										MONETT, MO										NASHVILLE, TN									
1013 MW										G16 MW										966 MW										967 MW										997 MW									
SFC	31	11	22.2	21.9	06	4	31	874	11.2	6.1	22	6	29	423	17.0	14.7	31	1.1	31	438	8.8	5.0	20	8	29	180	9.6	8.5	14	6																			
1000	31	126	24.1	22.6	06	2	6																	9	201	6.4	4.6																						
980	31	576	22.6	19.7	08	5	0							29	593	17.7	13.7	34	5	31	582	11.8	3.6	25	2	29	585	12.0	4.5	26	2.5																		
990	31	1,684	20.0	15.8	06	4	5	31	1,047	14.9	4.4	20	2	29	1,056	16.6	11.8	12	1	31	1,035	11.5	-1.0	27	4	29	1,036	9.9	1.5	28	3.7																		
960	31	1,684	17.2	10.8	06	8	3	31	1,530	13.4	7.2	24	2	29	1,742	15.0	7.4	15	2	31	1,511	9.4	-3.4	28	6	29	1,510	8.0	-1.8	28	4.5																		
650	31	2,454	2.2	7.5	05	2	6	31	2,038	-1.3	-3.4	26	3	2	2,554	3.8	5	19	3	31	2,012	-6.3	-6.3	29	2	29	2,005	5.4	-4.0	27	5.6																		
750	31	2,454	12.1	3.0	10	1	5	31	2,573	7.2	-3.7	26	4	2	2,595	10.8	-4	22	1	6	2,539	3.8	-9.0	29	7	29	2,535	3.8	-7.0	27	8.0																		
700	31	3,174	4.2	-4.9	11	1	0	31	3,138	3.9	-6.9	27	4	3	3,168	7.6	-3.0	25	1	9	3,096	-8	-13.5	29	7	29	3,093	-8	-10.6	28	9.7																		
650	31	3,745	6.2	-4.9	14	1	1	31	7,737	3	-10.4	27	4	1	3,775	3.8	-5.7	26	5	3	3,689	-22.0	-16.9	29	9	29	3,685	-1.7	-16.4	28	11.3																		
310	31	4,447	2.8	-11.4	10	8	31	4,374	-7.2	-16.7	27	5	4	29	4,420	-4.5	-9.9	26	7	31	4,321	-5.5	-21.0	29	11	29	4,318	-4.9	-20.6	27	13.4																		
950	31	5,137	-4.9	-16.4	10	6	31	5,057	-7.1	-22.4	26	7	2	5,111	-4.6	-17.1	26	7	5	4,999	-9.2	-25.3	28	12	29	4,998	-4.9	-25.0	27	14.9																			
970	31	5,447	-4.9	-21.2	13	5	31	5,373	-12.2	-24.5	26	8	3	5,398	-8.6	-23.1	26	8	9	5,279	-20.0	-20.8	28	13	29	5,279	-58.9	-30.1	27	17.4																			
980	31	7,101	-10.2	-26.9	21	2	6	31	6,950	-13.4	-29.6	26	11	0	29	7,045	-11.0	-29.9	25	10	30	6,947	-17	-34.0	27	18	29	6,941	-21	-19.0	-35.1	27	19.4																
400	31	7,609	-16.1	-32.1	24	2	6	31	7,461	-24.0	-35.4	26	14	2	7,549	-20.0	-34.3	25	11	6	7,386	-26.2	-39.9	28	16	28	7,393	-24.9	-39.9	27	22.4																		
350	31	8,603	-23.0	-38.1	26	4	0	31	8,426	-30.3	-47.3	26	16	2	8,529	-27.1	-40.1	25	15	7	8,341	-33.0	-44.8	27	18	28	8,354	-31.8	-44.9	27	24.4																		
300	31	7,711	-31.5	-44.3	22	6	4	31	9,500	-38.4	-49.1	26	19	1	29	9,619	-35.1	-48.1	25	18	7	9,405	-40.8	-50.3	27	20	28	9,424	-39.8	-49.9	26	28.6																	
250	31	1,107	-41.2		26	8	2	31	10,732	-46.4		26	22	1	29	10,866	-44.3		25	22	30	10,623	-49.2		27	23	28	10,649	-47.5		26	31.2																	
200	31	12,461	-53.7		25	6	6	31	12,187	-54.1		27	20	4	26	12,327	-55.0		26	24	29	12,061	-56.3		27	23	28	12,049	-55.0		26	32.4																	
150	31	13,297	-60.3		24	6	6	31	12,937	-59.4		27	21	4	27	13,166	-61.0		26	24	29	12,904	-61.0		27	24	1	12,915	-58.7		26	33.7																	
100	31	14,240	-67.9		26	6	6	31	13,996	-63.7		27	19	9	27	14,110	-66.9		26	21	29	13,864	-61.4		27	23	1	13,909	-61.1		27	29.6																	
125	31	14,318	-74.7		27	8	5	2	15,110	-66.1		28	15	6	27	15,195	-72.6		26	17	29	14,990	-63.7		27	20	27	15,038	-63.9		27	22.7																	
100	31	16,747	-78.6		27	3	8	29	16,455	-68.3		28	8	9	27	16,498	-74.1		26	10	29	16,356	-64.4		28	14	3	16,403	-64.4		27	17.6																	
70	31	17,747	-72.1		09	4	2	29	17,797	-66.4		29	4	4	27	17,874	-71.7		27	3	2	17,721	-63.4		28	9	26	17,773	-63.3		26	12.0																	
50	31	1,687	-68.6		05	2	7	29	1,610	-63.1		28	3	1	27	18,599	-67.4		04			18,545	-62.2		28	8	1	18,577	-61.8		27	8.5																	
30	31	19,614	-65.1		09	2	9	29	19,500	-62.7		70	1	0	27	19,536	-64.3		11	2	1	19,500	-60.9		28	9	2	19,553	-60.7		27	7.1																	
40	30	20,740	-61.4		09	4	9	29	20,444	-55.7		27	8	6	27	20,461	-61.3		11	7	2	20,437	-59.7		27	5	26	20,498	-58.8		26	4.8																	
50	30	22,138	-57.4		09	6	2	26	21,107	-56.4		28	6	2	22,054	-58.3		10	2	28	22,039	-57.7		27	5	4	22,048	-57.0		27	5.9																		
1	29	21,972	-53.1		08	8	6	26	23,943	-52.6		29	1	7	27	23,880	-54.6		08	4	27	23,848	-55.0		27	6	3	23,936	-53.5		27	7.3																	
25	26	25,156	-44.9		04	10	1	25	25,116	-51.7		27	2	3	27	25,055	-51.8		04	4	6	27	25,038	-53.2		27	8	24	25,116	-51.8		27	7.8																
10	29	26,626	-46.8		09	11	4	25	26,573	-44.4		28	3	7	25	26,611	-48.7		09	5	3	26	26,687	-50.4		26	11	0	26,561	-48.9		27	9.9																
15	15	28,571	-43.5		08	12	2	74	28,460	-46.1		26	7	4	28	28,419	-46.2		10	4	1	28,377	-48.0		27	14	4	28,462	-48.0		26	16.1																	
10	10	31,332	-38.9		16	1	10	31,100	-42.4		27	10	4						10	2	22	31,055	-44.2		26	19	4	31,155	-44.7		26	19.4																	
					8	33,590	-79.4													7	33,409	-41.8																											



## Average monthly values

OCTOBER 1980

## Average monthly values

OCTOBER 1980

[illegible]

TEMPA FAY, FL 1015 MF										TOPEKA, KS 966 MF										TRUK, CAROLINE IS. 1010 MF										TUCSON, AZ 926 MB										VANDENBERG AFB, CA 1005 MH									
560	31	13	11.15	17.6	05	1.0	31	26.6	6.8	3.8	29	3	31	2	28.5	25.0	36	4	31	789	15.2	3.0	14	3.7	31	100	11.8	8.1	01	1.2																			
1000	31	17	21.2	17.5	06	1.5							31	31	92	27.6	24.6	03	7					31	141	13.3	8.7	01	1.7																				
450	31	54	20.2	14.8	12	6	31	572	11.4	1.8	25	2.3	31	547	24.3	22.2	07	1.3						31	578	20.0	1.5	01	3.9																				
900	31	1,049	17.4	12.0	24	1.6	31	1,024	10.9	-1.0	28	4.0	31	1,020	21.5	19.0	08	2.0	31	1,027	18.9	2.0	13	4.7	31	1,044	19.4	-9	36	3.2																			
850	31	1,576	15.5	6.7	24	2.4	31	1,499	9.0	-3.5	29	6.0	31	1,515	18.6	15.8	08	2.8	31	1,515	16.8	-1.0	13	4.7	31	1,532	16.3	-4.0	34	1.6																			
700	31	2,049	12.7	2.7	24	3	31	1,999	6.5	-6.1	30	7.1	31	2,035	16.2	13.0	08	3.4	31	2,028	13.0	-3.1	14	1.6	31	2,044	12.5	-6.7	31	.8																			
750	31	2,599	10.4	-3.6	25	4.5	31	2,526	1.1	-9.3	30	8.4	31	2,583	13.6	9.5	08	3.9	31	2,566	8.8	-5.3	18	1.3	31	2,582	8.9	-11.5	34	.6																			
800	31	3,149	7.1	-8.8	25	5.1	31	3,063	9.0	-12.7	29	9.0	31	3,163	5.6	4.6	08	3	31	3,133	4.4	-9.8	17	1.0	31	3,149	7.1	-15	30	.7																			
650	31	3,768	4.4	-11.4	25	6.1	31	3,673	-2.7	-15.7	30	11.1	31	3,779	7.4	2.7	09	5.1	31	3,732	6.6	-15.2	26	4.6	31	3,748	1.3	-18.0	31	1.4																			
600	31	4,416	1.3	-18.7	26	8.4	31	4,304	-6.2	-19.6	29	11.9	31	4,435	3.5	-1.5	09	5.5	31	4,370	-3.2	-20.6	27	1.4	31	4,387	-2.5	-22.2	30	2.0																			
550	31	5,111	-2.4	-21.2	26	9.7	31	4,979	-10.6	-24.7	29	13.8	31	5,174	1.0	-5.4	09	6.3	31	5,052	-7.4	-24.9	28	3.3	31	5,072	-6.8	-26.2	29	2.3																			
500	31	5,860	-7.4	-26.0	26	11.8	31	5,705	-15.5	-29.9	29	13.7	31	5,897	-4.0	-10.5	09	6.1	31	5,788	-12.0	-29.6	28	4.2	31	5,809	-12.0	-29.6	28	2.8																			
450	31	6,617	-12.8	-28.7	26	13.8	31	6,492	-20.8	-34.2	28	14.6	31	6,722	-8.4	-16.3	09	5.8	31	6,586	-17.7	-34.2	29	5.8	31	6,606	-17.7	-34.8	29	4.1																			
400	31	7,361	-19.1	-33.4	26	16.8	30	7,150	-27.0	-39.7	29	16.8	31	7,628	-13.8	-22.4	09	5.9	31	7,457	-23.8	-39.4	29	7.8	31	7,473	-24.4	-39.6	29	6.2																			
350	31	8,540	-26.0	-39.4	26	20.5	30	8,287	-34.2	-44.8	29	20.3	31	8,633	-20.4	-29.8	09	5.8	30	8,423	-31.1	-45.3	29	8.4	31	8,440	-31.1	-45.3	29	6.2																			
300	31	9,417	-34.6	-46.4	26	22	30	9,158	-42.7	-50.7	29	22.5	31	9,700	-17.0	-28.4	08	5.8	30	9,494	-35.2	-	29	30	30	9,505	-39.9	-51.0	28	9.0																			
250	30	10,851	-41.4	-54.6	24	26.5	29	10,568	-49.9		29	20.0	30	11,029	-39.1	-88.8	08	5.3	30	10,717	-48.3		29	12.6	30	10,728	-48.0		28	11.7																			
200	29	12,355	-54.5		26	27.7	29	12,007	-55.8		29	20.7	30	12,517	-51.5		07	5.3	30	12,167	-54.8		28	15.0	30	12,176	-55.0		29	13.0																			
175	29	13,199	-60.4		26	26.4	29	12,853	-58.1		29	21.4	30	13,369	-59.0		07	4.6	30	13,015	-57.8		28	15.5	30	13,022	-58.8		28	12.0																			
150	29	14,145	-66.6		27	24.5	28	13,871	-59.9		28	19.9	30	14,318	-67.0		05	5.0	30	13,977	-62.0		28	15.2	30	13,981	-62.8		28	10.0																			
125	28	15,151	-71.6		27	19.4	27	14,958	-62.0		28	17.8	30	15,398	-74.7		07	6.2	30	15,094	-65.8		28	14.1	29	15,090	-65.2		28	10.0																			
100	28	16,151	-73.8		27	11.5	26	16,336	-63.1		27	13.8	30	16,676	-79.2		08	7.1	30	16,439	-68.5		28	10.8	29	16,441	-67.4		28	8.1																			
75	28	17,471	-70.3		26	19.1	26	17,111	-62.0		26	17.9	30	17,573	-81.1		07	3	30	17,788	-67.8		29	10.4	29	17,811	-68.4		28	5.5																			
70	28	18,656	-66.5		25	1.2	25	18,540	-61.0		26	8.4	30	18,754	-68.4		04	5	28	18,591	-65.2		29	2.2	28	18,595	-64.2		29	1.5																			
60	28	19,595	-64.0		14	5	21	19,505	-60.7		29	5.7	17	19,686	-65.1		30	1.1	26	19,531	-62.7		24	5	26	19,546	-62.6		29	5																			
50	26	20,721	-60.6		07	1.5	21	20,643	-59.3		29	4.7	30	20,689	-60.9		29	2.6	26	20,660	-61.0		18	6	25	20,671	-60.3		29	.5																			
40	27	22,120	-57.3		05	3.6	20	22,054	-58.7		27	4.0	30	22,210	-57.0		27	3.8	26	22,055	-58.3		27	8	24	22,066	-58.2		28	1.9																			
30	27	23,517	-53.1		08	4.3	20	23,878	-54.6		27	6.5	29	24,050	-53.1		29	2.0	26	23,880	-55.5		28	2.4	24	23,886	-55.7		27	4.3																			
25	27	25,178	-50.9		05	4.0	20	25,047	-53.7		27	9.2	29	25,232	-50.7		27	1.8	26	25,048	-53.2		26	2.5	24	25,053	-53.9		27	5.2																			
20	26	26,676	-47.6		08	4.0	20	26,490	-51.7		26	12.9	27	26,695	-47.8		12	2.0	26	26,497	-50.4		26	4.8	24	26,541	-51.5		26	8.6																			
15	26	28,514	-48.4		07	1.9	19	28,319	-47.8		27	18.3	27	28,660	-47.3		10	6.4	27	28,384	-48.4		27	8	24	28,773	-48.4		26	1.5																			
10	17	31,247	-39.9		07	1.9	13	31,051	-46.1		27	28.0	12	31,351	-39.6					19	31,078	-45.4		27	12.9	23	31,057	-45.4		26	19.2																		
7																			6	33,140	-43.9				17	33,363	-41.7		26	21.2																			

		VICTORIA, TX 1013 MB					* WAKE IS., PACIFIC AREA 1015 MB					* WALLOPS ISLAND, VA NASA 1017 MB					WASHINGTON DULLES INT. AP 1007 MB					WAYCROSS, GA 1012 MB								
500	21	7.1	15.6	12.4	02	1.4	31	5	27.1	23.7	08	4.7	31	4	11.9	8.2	32	1.1	31	85	6.8	4.0	30	-8	31	44	14.3	12.4	34	.6
1000	31	145	19.7	12.4	05	1.4	31	132	26.9	23.4	09	6.4	30	152	12.9	7.1	31	2.3	27	155	8.8	4.1	31	1.6	31	142	16.6	13.0	01	1.0
1500	41	587	18.6	10.1	13	1.6	31	585	23.5	20.9	09	9.1	31	578	11.1	4.5	30	3.7	31	569	9.7	2.0	29	4.1	31	581	16.8	8.9	36	1.3
2000	51	1,049	16.1	6.4	14	1.3	31	1,057	20.6	16.7	10	8.9	31	1,027	8.8	2.5	28	4.9	31	1,016	7.4	.9	29	6.4	31	1,040	14.5	6.9	26	1.9
2500	61	1,533	14.0	2.9	21	1.4	31	1,550	17.8	12.6	09	8.3	31	1,499	7.1	-1.5	26	8.8	31	1,486	5.6	-3.4	28	7.6	31	1,522	12.8	2.8	26	4.1
3000	71	2,043	11.9	-1.2	25	2.2	31	2,067	15.5	7.4	09	7.9	31	1,997	4.9	-4.0	26	8.5	31	1,980	3.8	-8.2	27	8.4	31	2,029	10.5	-2.0	26	6.0
3500	81	2,581	9.1	-4.5	27	3.1	31	2,611	12.9	1.6	09	8.6	31	2,521	2.4	-8.4	26	10.6	31	2,502	1.4	-10.4	27	10.4	31	2,565	8.3	-5.3	26	7.5
4000	91	3,149	6.9	-7.4	28	4.1	31	3,183	9.7	-3.0	09	9.1	31	3,077	-1.1	-11.2	26	13.3	31	3,056	-2.1	-14.0	26	13.3	31	3,122	8.4	-11.0	26	8.8
4500	101	3,717	2.7	-8.9	27	6.1	31	3,802	6.9	-7.2	09	9.3	31	3,668	-2.5	-14.2	26	16.2	31	3,648	-7.8	-17.0	26	14.7	31	3,737	4.4	-12.8	26	10.7
5000	111	4,306	-1.2	-14.3	27	8.6	31	4,456	3.0	-10.1	09	7.0	31	4,300	-5.4	-18.8	26	19.0	30	4,275	-7.8	-19.0	26	16.9	31	4,381	-5.5	-15.8	26	12.8
5500	121	5,006	-4.7	-20.7	26	10.2	31	5,155	-1.2	-16.6	09	7.2	31	4,979	-8.5	-22.7	26	21.7	30	4,948	-11.0	-23.6	26	19.9	31	5,071	-4.8	-19.9	26	14.5
6000	131	5,829	-9.7	-25.9	26	11.5	31	5,908	-6.2	-20.1	10	7.4	31	5,712	-12.8	-26.5	26	23.5	30	5,675	-15.0	-30.1	27	22.1	31	5,815	-9.4	-23.6	26	16.3
6500	141	6,635	-14.6	-34.1	26	13.7	31	6,726	-11.2	-25.5	10	7.7	31	6,508	-18.2	-31.4	26	25.7	30	6,465	-15.9	-34.9	27	25.1	31	6,620	-15.1	-28.3	26	18.2
7000	151	7,516	-20.6	-34.0	26	16.8	31	7,619	-17.3	-30.5	09	7.5	31	7,377	-24.4	-37.4	26	28.1	30	7,328	-25.8	-41.0	26	28.5	30	7,500	-21.4	-33.4	26	20.6
7500	161	8,472	-28.2	-39.9	26	19.1	31	8,610	-24.2	-36.4	09	5.4	31	8,340	-31.2	-43.5	26	30.5	30	8,286	-32.5	-45.6	26	30.3	30	8,473	-28.4	-40.5	26	23.0
8000	171	9,507	-36.0	-48.6	26	21.8	31	9,657	-32.0	-46.8	07	3.8	30	10,638	-47.4	-74.5	25	39.1	30	10,577	-47.7	-74.7	26	36.3	30	10,801	-45.2	-74.2	26	30.2
8500	181	10,618	-45.2	-56.2	26	24.9	31	10,742	-42.4	-70.4	05	3.3	30	12,087	-55.2	-82.6	24	40.0	30	12,026	-54.5	-81.5	26	36.1	30	12,260	-54.8	-82.6	26	33.9
9000	191	12,276	-54.8	-64.8	26	29.4	30	13,282	-60.4	-80.4	04	3.1	30	12,933	-58.9	-80.9	26	39.4	30	12,875	-57.8	-80.8	26	38.8	30	13,104	-59.9	-82.6	26	33.1
9500	201	13,121	-59.8	-70.4	26	33.1	30	14,227	-66.8	-86.8	06	4.0	30	13,893	-61.8	-81.8	26	32.9	30	13,842	-60.2	-80.2	26	28.9	30	14,055	-65.0	-82.6	26	29.0
10000	211	14,070	-65.3	-76.8	26	36.9	30	15,313	-72.7	-90.7	07	6.0	30	15,017	-63.9	-83.9	26	27.2	30	14,974	-62.4	-80.4	26	23.7	30	15,154	-69.1	-82.6	26	24.4
10500	221	15,147	-69.3	-78.3	27	40.1	30	16,363	-77.1	-95.1	08	7.4	30	16,383	-64.2	-84.2	26	20.3	30	16,348	-63.0	-80.0	26	18.9	30	16,480	-70.8	-82.6	26	16.3
11000	231	16,480	-78.3	-86.8	27	44.1	30	17,666	-85.1	-100.1	09	8.7	30	17,756	-61.9	-81.9	26	13.8	30	17,726	-61.8	-80.8	26	13.8	30	17,888	-68.3	-82.6	26	13.8
11500	241	17,888	-86.8	-95.1	27	48.1	30	18,957	-92.1	-107.1	10	9.7	30	18,967	-60.7	-80.7	26	12.8	30	18,937	-60.6	-80.6	26	12.8	30	19,109	-75.7	-82.6	26	12.8
12000	251	18,605	-66.8	-95.1	27	52.1	30	19,557	-67.8	-87.8	09	6.8	30	19,587	-59.5	-79.5	26	8.7	30	19,521	-59.4	-79.4	26	8.7	30	19,563	-60.2	-82.6	25	3.1
12500	261	19,545	-63.6	-92.6	27	56.1	30	20,693	-75.1	-100.1	09	6.8	30	20,691	-58.4	-78.4	26	6.9	29	20,666	-58.5	-78.5	26	8.4	30	20,694	-62.2	-82.6	28	1.7
13000	271	20,673	-60.7	-90.7	17	1.0	25	22,075	-59.9	-89.9	09	6.8	30	22,102	-56.3	-76.3	26	6.5	29	22,076	-56.6	-76.6	27	7.1	30	22,098	-56.8	-80.7	30	.5
13500	281	22,102	-56.3	-80.7	12	1.1	25	23,495	-55.1	-85.1	09	9.2	30	23,490	-54.1	-74.1	26	6.7	28	23,003	-54.6	-74.6	27	8.3	30	23,936	-53.3	-80.7	06	.5
14000	291	23,901	-57.1	-81.1	11	1.1	25	25,078	-52.2	-82.2	09	10.5	28	25,120	-51.8	-71.8	27	8.5	28	25,076	-52.5	-72.5	27	9.3	29	25,118	-50.7	-80.7	31	.2
14500	301	25,078	-51.8	-71.8	06	1.1	25	26,585	-49.3	-69.3	09	10.7	26	26,585	-49.3	-69.3	27	8.8	28	26,527	-50.0	-70.0	27	13.1	26	26,578	-49.8	-80.7	28	3.0
15000	311	26,585	-49.3	-69.3	12	1.2	23	28,470	-46.1	-66.1	09	11.8	22	28,470	-46.1	-66.1	27	14.1	25	28,418	-47.8	-67.8	27	15.2	26	28,469	-47.8	-80.7	28	3.0
15500	321	28,470	-46.1	-66.1	06	1.3	11	31,157	-43.4	-63.4	08	13.5	11	31,157	-43.4	-63.4	27	14.1	13	31,074	-44.9	-64.9	27	16.8	13	31,221	-41.2	-80.7	27	7.2
16000	331	31,157	-43.4	-63.4	06	1.3	11	31,157	-43.4	-63.4	08	13.5	11	31,157	-43.4	-63.4	27	14.1	13	31,074	-44.9	-64.9	27	16.8	13	31,221	-41.2	-80.7	27	7.2



## Average monthly values

OCTOBER 1982

[illegible]



# SOLAR RADIATION INTENSITIES

Tabulated in langleys per minute on a surface normal to the direction of the sun.

OCTOBER 1980

PALMER, ALASKA										TUCSON, ARIZONA											
Sun's azimuth distance										Sun's zenith distance											
A.M.					*	P.M.					A.M.					*	P.M.				
78.7°	75.7°	70.7°	60.0°			60.0°	70.7°	75.7°	78.7°		78.7°	75.7°	70.7°	60.0°			60.0°	70.7°	75.7°	78.7°	
MAINA LAB OBSERVATORY, HI										TUCSON, ARIZONA											
Air mass										Air mass											
1.84	2.67	2.93	1.34	*		1.34	2.01	2.67	3.34		1.84	1.71	2.28	1.86	*		1.86	2.78	3.71	4.64	
1-----	1.18	1.23	1.33	1.46	1.55	-----	-----	-----	-----	1-----	.87	.96	1.09	1.24	1.38	1.49	1.05	.94	.83	.75	
2-----	1.19	1.28	1.38	1.46	-----	-----	-----	-----	-----	2-----	.76	.96	1.10	1.24	1.39	1.26	1.14	.99	.86	.75	
3-----	1.14	1.22	1.31	1.42	-----	-----	-----	-----	-----	3-----	.66	.91	1.04	1.19	1.43	1.15	.98	.86	.73	.62	
4-----	-----	-----	-----	-----	1.62	1.29	1.20	1.11	-----	4-----	.56	.91	1.00	1.20	1.34	1.17	.99	.88	.74	.63	
5-----	1.11	1.23	1.33	1.44	1.57	-----	-----	-----	-----	5-----	.46	.86	.98	1.13	1.37	1.17	.94	.81	.73	.61	
6-----	1.16	1.24	1.33	1.44	1.56	1.42	1.30	1.21	1.13	6-----	.39	.89	1.00	1.17	1.36	1.16	.96	.81	.71	.60	
7-----	1.15	1.23	1.33	1.44	-----	1.44	1.32	1.25	1.15	7-----	.31	.92	1.06	1.21	1.36	1.21	1.05	.92	.82	.72	
8-----	1.18	1.26	1.35	1.47	-----	-----	-----	-----	-----	8-----	.24	.91	1.03	1.17	1.32	1.10	.90	.80	.72	.64	
9-----	1.14	1.24	1.34	1.46	1.58	-----	-----	-----	-----	9-----	.19	.91	1.04	1.17	1.30	1.15	.94	.89	.80	.73	
10-----	1.17	1.23	1.33	1.45	1.57	-----	-----	-----	-----	10-----	.14	.85	.97	1.08	1.24	1.02	.88	.86	.76	.68	
11-----	1.14	1.21	1.30	1.42	1.55	-----	-----	-----	-----	11-----	.11	.82	.96	1.14	1.30	1.14	.96	.80	.71	.63	
12-----	1.19	1.28	1.36	1.47	-----	-----	-----	-----	-----	12-----	.08	-----	1.02	-----	-----	-----	-----	-----	-----	.60	
13-----	1.19	1.27	1.35	1.47	-----	-----	-----	-----	-----	13-----	.05	-----	-----	1.06	1.25	-----	.97	.80	.69	.62	
14-----	1.21	1.29	1.37	1.49	-----	-----	-----	-----	-----	14-----	.01	.91	1.02	-----	-----	1.14	.94	.78	.67	.60	
15-----	1.16	1.24	1.35	1.47	1.57	-----	-----	-----	-----	15-----	.00	-----	-----	-----	1.27	-----	.88	.80	.73	.66	
16-----	1.25	1.33	1.40	1.52	1.62	1.49	1.37	1.28	1.17	16-----	.00	-----	-----	-----	-----	1.21	1.04	.90	.76	.64	
17-----	1.24	1.32	1.39	1.51	1.63	-----	-----	-----	-----	17-----	.00	.99	1.11	1.27	1.42	1.20	1.02	.90	.79	.68	
18-----	1.25	1.32	1.40	1.52	-----	-----	-----	-----	-----	18-----	.00	1.01	1.14	1.30	1.43	1.28	1.12	.98	.87	.77	
19-----	1.20	1.28	1.37	1.49	1.56	-----	-----	-----	-----	19-----	.00	-----	1.10	1.24	1.38	1.22	1.04	.90	.79	.70	
20-----	1.21	1.28	1.38	1.49	1.59	1.47	1.37	1.27	1.19	20-----	.00	.88	.97	1.10	1.25	1.38	1.26	1.10	.95	.85	
21-----	1.24	1.30	1.39	1.50	1.61	1.50	1.38	1.27	1.18	21-----	.00	.86	.96	1.07	1.23	1.35	1.25	1.09	.96	.86	
22-----	1.20	1.28	1.37	1.48	1.59	1.47	1.35	1.24	1.17	22-----	.00	.87	.98	1.10	1.25	1.35	1.24	1.08	.94	.84	
23-----	1.19	1.27	1.35	1.47	-----	-----	-----	-----	-----	23-----	.00	.86	.96	1.07	1.19	1.34	1.20	1.03	.90	.80	
24-----	1.19	1.27	1.35	1.47	-----	-----	-----	-----	-----	24-----	.00	.86	.96	1.08	1.18	1.38	1.26	1.08	.96	.86	
25-----	1.19	1.27	1.35	1.47	-----	-----	-----	-----	-----	25-----	.00	.84	.94	1.04	1.14	1.24	1.14	.98	.86	.76	
26-----	1.19	1.27	1.35	1.47	-----	-----	-----	-----	-----	26-----	.00	.83	.92	1.02	1.20	1.31	1.20	1.04	.90	.81	
27-----	1.19	1.27	1.35	1.47	-----	-----	-----	-----	-----	27-----	.00	.83	.92	1.02	1.20	1.31	1.20	1.04	.90	.81	
28-----	1.19	1.27	1.35	1.47	-----	-----	-----	-----	-----	28-----	.00	.84	.94	1.03	1.23	1.32	1.24	1.10	.99	.89	
29-----	1.19	1.27	1.35	1.47	-----	-----	-----	-----	-----	29-----	.00	.95	1.04	1.16	1.28	1.39	1.27	1.15	1.02	.92	
30-----	1.19	1.27	1.35	1.47	-----	-----	-----	-----	-----	30-----	.00	.86	.96	1.06	1.21	1.31	1.20	1.04	.90	.81	
31-----	1.19	1.27	1.35	1.47	-----	-----	-----	-----	-----	31-----	.00	.86	.96	1.06	1.21	1.31	1.20	1.04	.90	.81	
Average	1.19	1.27	1.35	1.47	1.58	1.46	1.34	1.25	1.16	Average	.82	.94	1.06	1.21	1.34	1.20	1.02	.89	.78	.70	

## NET RADIATION

Net radiation in langleys per day (6 a.m. to 6 a.m.) at Palmer, Alaska.

Date . . . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langleys . . .	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0	4.1	4.2

# REFERENCE NOTES

## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES:

Dates in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

- + And also on an earlier date or dates.
- D Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snowfall.

CLIMATOLOGICAL DATA - METRIC UNITS: Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

- B Number of days maximum 21.1°C. or above for Alaskan Stations.
- Y Peak Gust.
- + And also on an earlier date or dates.
- U Indicates Urban site.
- R Indicates Rural site.
- Ø Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

1 foot = 0.3048 meters  
 °F. =  $9 \times \text{°C} + 32$   
 5  
 1 inch = 25.4 millimeters  
 1 mile per hour = 0.447 meters per second

HEATING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

COOLING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

## STORM SUMMARY:

- o Includes crop damage.
- C Crop damage.
- \* No occurrence of storms or unusual weather phenomena reported.
- @ Includes heavy sleet storm.
- # Freezing drizzle and freezing rain, commonly known as glaze.
- Ø For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.
- # No Storm Data Report received for this State.
- <> Report Incomplete.
- † Storm damages are placed in categories varying from 1 to 9 as follows:
  - 1 Less than \$50
  - 2 \$50 to \$500
  - 3 \$500 to \$5,000
  - 4 \$5,000 to \$50,000
  - 5 \$50,000 to \$500,000
  - 6 \$500,000 to \$5 Million
  - 7 \$5 Million to \$50 Million
  - 8 \$50 Million to \$500 Million
  - 9 \$500 Million to \$5 Billion

## RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, G.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Dew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Dew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Dew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygrometers. These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

- \* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.
- + Observations for these stations are scheduled at 0000 G.C.T.
- † Dew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Dew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Dew Point temperatures replaced Relative Humidity January 1967.

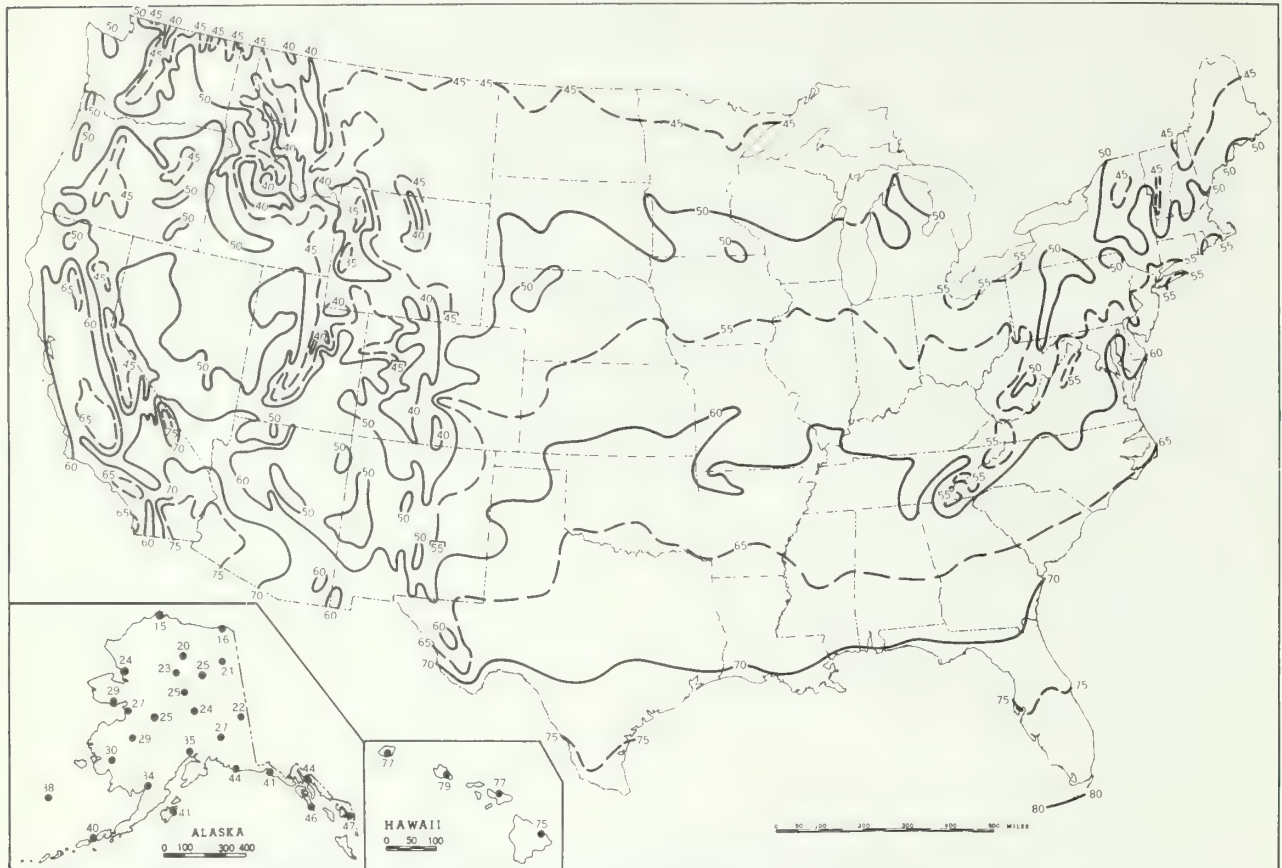
SOLAR RADIATION INTENSITIES: Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

ci	Clouds Present	DM	Moderate Dust	HM	Moderate Haze	KS	Slight Smoke
*	Values corresponding to true solar noon	DS	Slight Dust	HS	Slight Haze	M	Moderate Haze-indeterminable
BD	Blowing Dust	F	Fog	I	Intense Haze-indeterminable		
BN	Blowing Sand	CF	Ground Fog	K	Smoke	N	Sand
D	Dust	H	Haze	KI	Intense Smoke	S	Slight Haze-indeterminable
DI	Intense Dust	HI	Intense Haze	KM	Moderate Smoke		

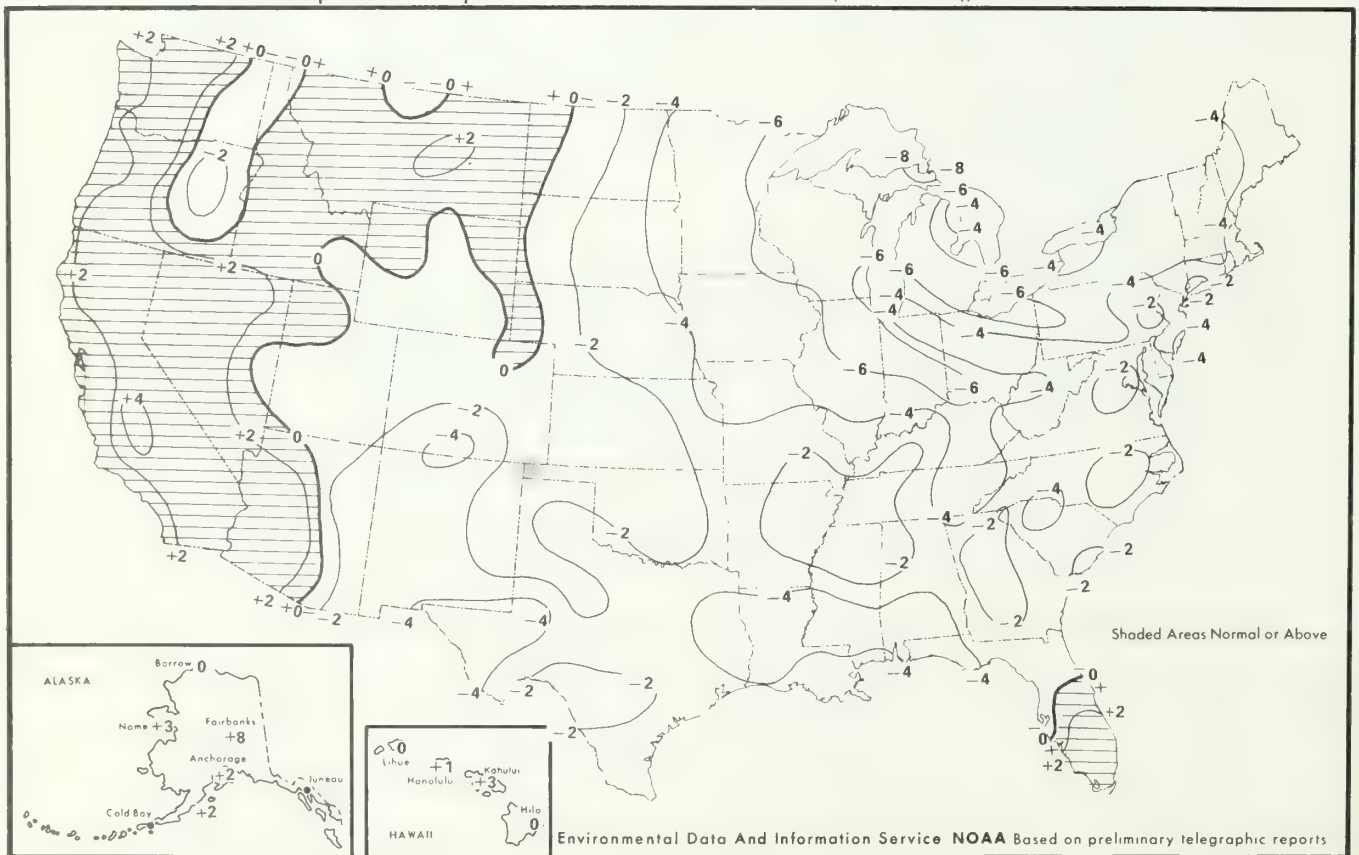
NET RADIATION: The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of sod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.

Chart 1. A. Normal Daily Average Temperature (°F. 1941-70), October.



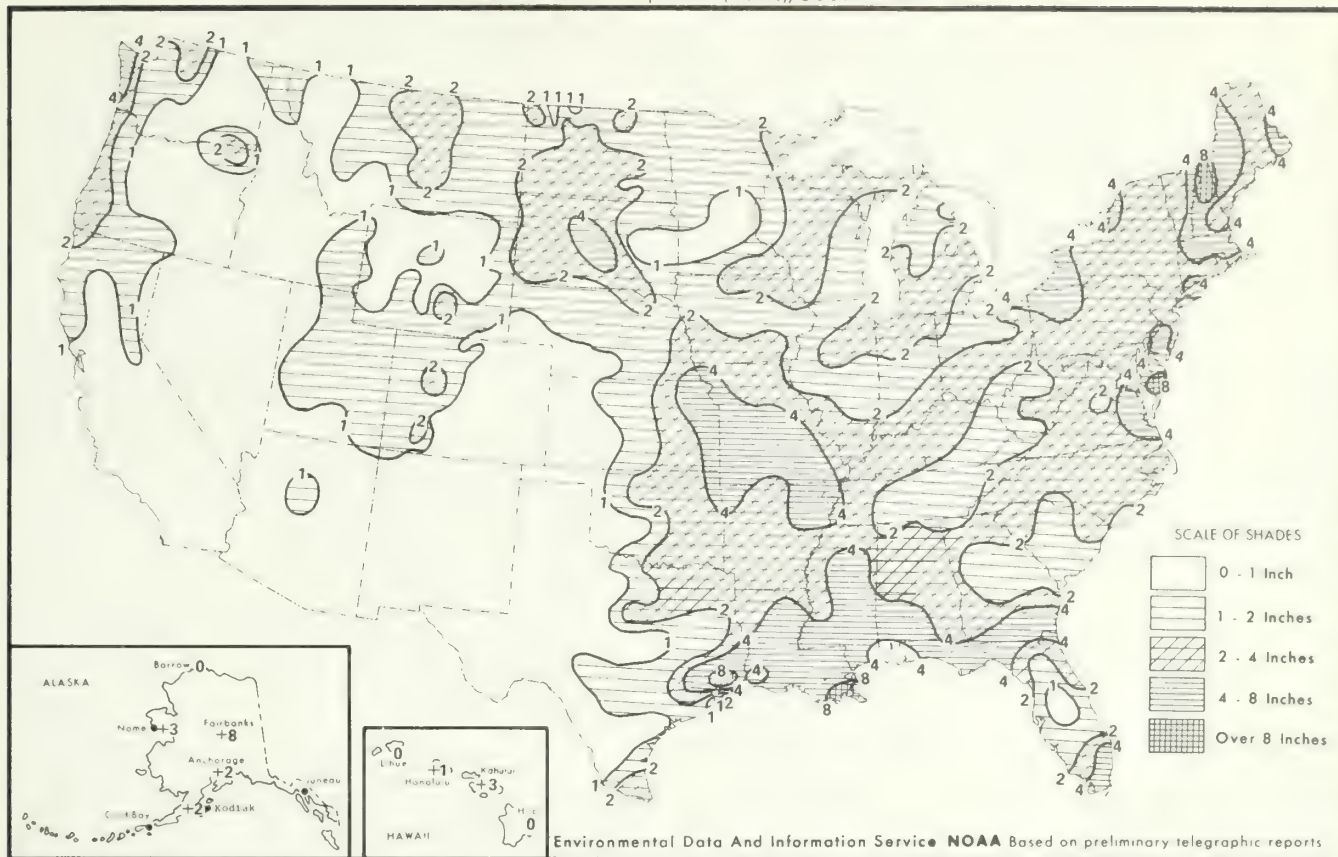
B. Temperature Departure from 30 - Year Mean (°F 1941-70), October 1980



Environmental Data And Information Service NOAA Based on preliminary telegraphic reports



Chart II A Total Precipitation (Inches), October 1980



B. Percentage of Normal Precipitation, October 1980

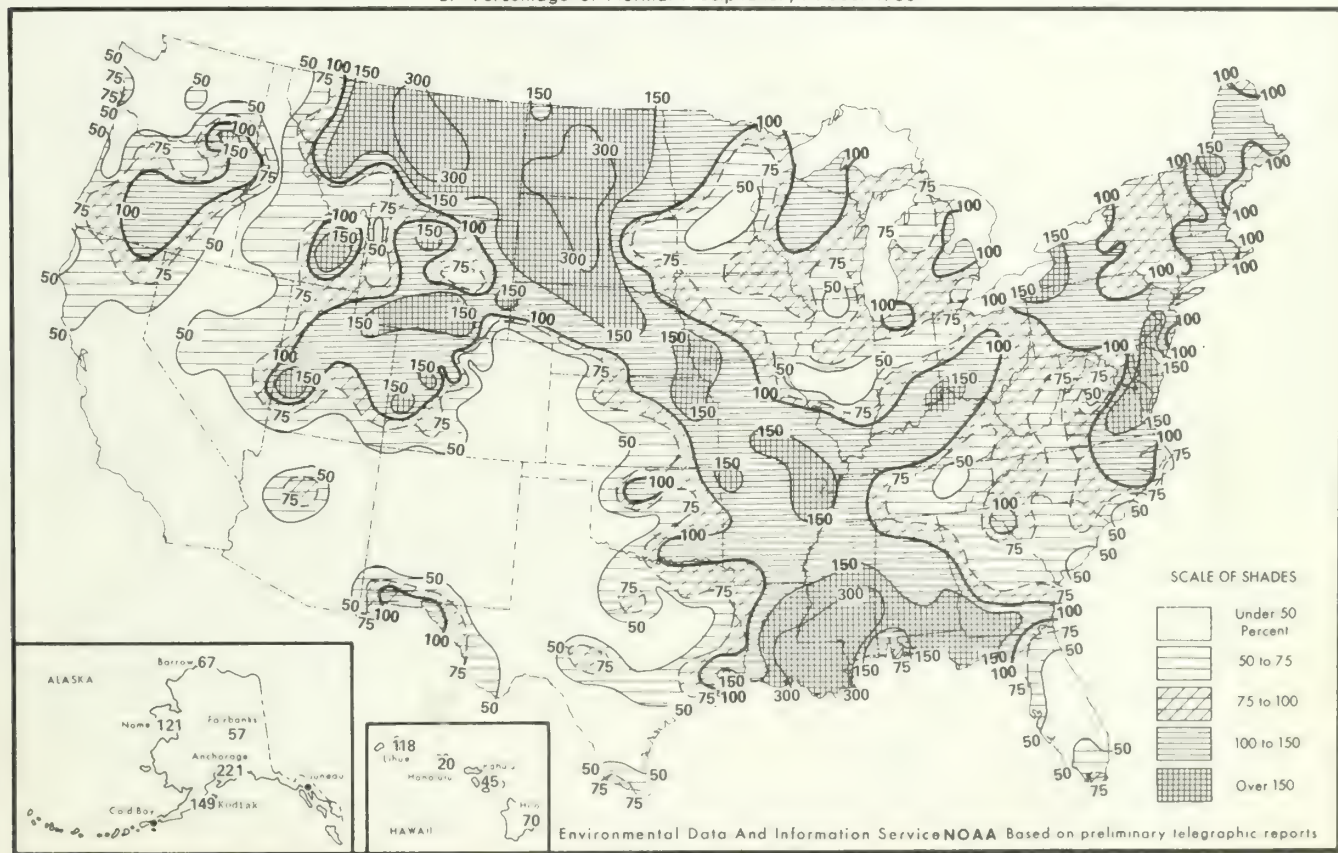
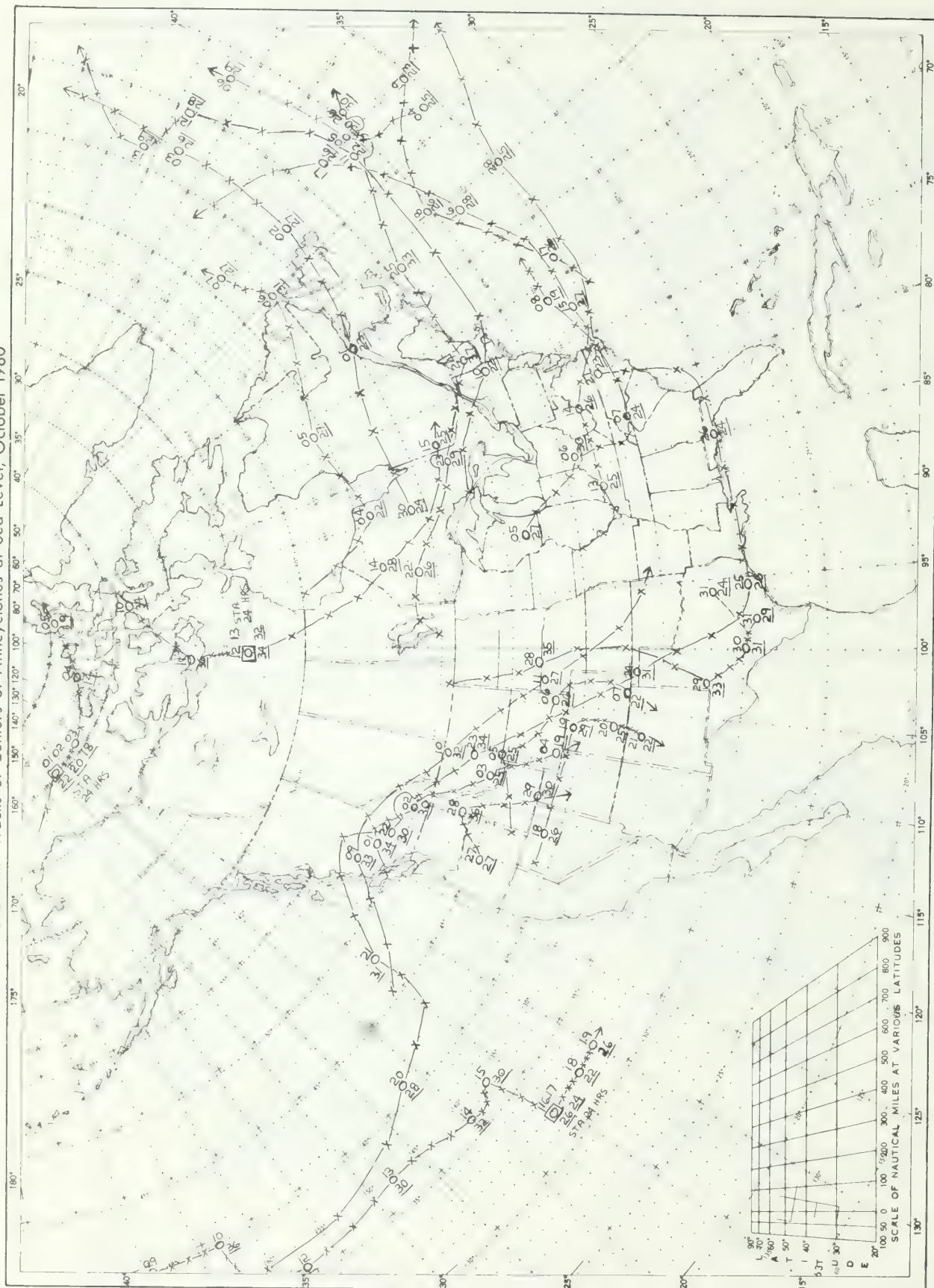


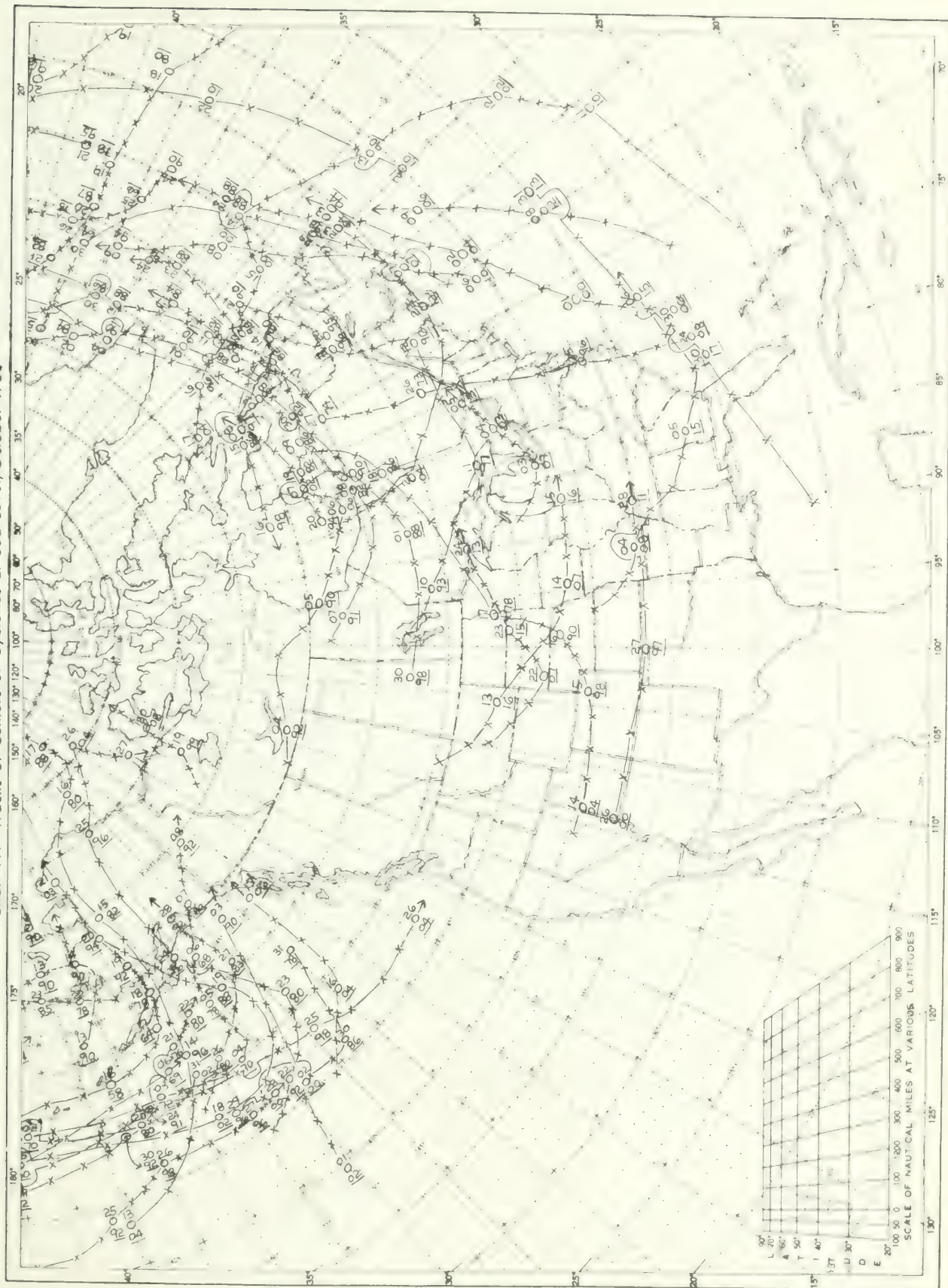
Chart III. Tracks of Centers of Anticyclones at Sea Level, October 1980



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
 'x's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.



Chart IV. Tracks of Centers of Cyclones at Sea Level, October 1980



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar  
 'x's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track  
 indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included







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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



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*Connel B. Mitchell*

DIRECTOR  
NATIONAL CLIMATIC CENTER



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NOTE: Late reports and corrections will be carried in the June and December issues of this publication. An explanatory page "Description of Charts" will be carried in the January and July issues.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

NOVEMBER 1980

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist

Environmental Data and Information Service, NOAA

**HIGHLIGHTS:** Many of the important agricultural areas of the Nation were drier than normal. Much of the winterwheat acreage in the central Plains had less than one fourth of the normal precipitation. In the East, some of the very dry areas had 75 to 100% of their normal rain, but, because of the lowered demand for water, this amount helped relieve the dryness. Heavy snow fell during November and at the end of the month, covered most of the Rockies, parts of the central Plains, and the Northeast except for the coastal area. The average temperature for November was warmer than normal over most of the Nation by as much as 6° in the northern Plains. The Northeast and much of the South was colder than normal.

**FIRST WEEK-** A fast-moving cold front entered the Pacific Northwest on the first day of the week and moved off the Atlantic coast by midweek. Moderate rain fell along the northwest coast but little or none fell in the Plains. Rain accompanied the front from the Great Lakes eastward and became moderate east of the Appalachians. Later in the week, storm systems moved across the northern tier of the States and brought light rain to the northern Plains and snow or freezing rain to the north-Great Lakes and western New England. Temperatures were warmer than normal in all of the Nation except the East Coast and New England. In the West, the average temperature for the week was as much as 9 to 12° warmer than normal.

**SECOND WEEK-** A wide variety of weather affected the Nation. A winter storm developed in the central Rockies and spread snow through the Rockies and central Plains and then into the southwestern Plains. The snow changed to rain as the cold front moved through the East. As the front moved into

the Florida peninsula, a storm of opposite characteristics moved into the Gulf of Mexico. Tropical storm Jeanne moved westward across the Gulf. An unusual event for so late in the season, the storm induced some heavy rain from central Texas to northern Mississippi and southern Florida. Key West, FL, measured nearly 27 inches of rain.

**THIRD WEEK-** A low pressure center, the remnants of tropical storm Jeanne, moved from the western Gulf of Mexico northeastward and spread moderate to heavy rain from Louisiana to eastern Kentucky and moderate rain along the east coast. Snow fell from Ohio through New England and in parts of Arkansas and Missouri. Freezing weather reached as far south as central Texas and then moved eastward to cover northern Florida. A warming trend began in the northern Plains at midweek.

**FOURTH WEEK-** A winter storm moved out of the Rockies early in the week and spread snow along the southern east slopes of the mountains and over the High Plains of Texas. Sleet and wet snow extended as far east as northern Louisiana. The storm moved into the Gulf of Mexico and, after midweek, spread snow northward through Arkansas and Missouri and then northeastward through New England. Rain covered the rest of the East. Freezing temperatures again reached into northern Florida. At the end of the week, some of the coldest air of the season was moving into the northern Plains. On the average for the week, temperatures were well above normal in the northern Plains and colder than normal in the Midwest and the South.



# HURRICANE JEANNE

7-16 November 1980

National Hurricane Center  
Miami, Florida

There have been only three November hurricanes in the Gulf of Mexico during this century. Jeanne was the first to strengthen to a hurricane there; the other two were already hurricanes when they entered the Gulf.

Jeanne formed from a disturbance which developed over the southwest Caribbean Sea. The disturbance may have been initiated by a weak tropical wave that can be traced to the African coast on October 26.

A tropical depression formed on November 8, as disturbed weather which had been concentrated near the coast of Nicaragua moved northward over the open waters of the northwest Caribbean Sea. Even though it was the second week in November, the atmospheric circulation over the Gulf of Mexico and southwestern United States resembled an early fall pattern. The area was dominated by a large, stable, slowly-moving high pressure ridge at the surface and aloft. The long wave pattern was anchored by an intense North Atlantic low centered southeast of Newfoundland. So, although Jeanne developed unusually late in the season, its environment was similar to that in which hurricanes commonly form.

The depression entered the Yucatan Channel on the 9th, and strengthened to a tropical storm. At this time, an Air Force reconnaissance mission found that surface winds had increased to 45 knots and the central pressure had dropped to 999 millibars. The unseasonable storm apparently caught several ships by surprise. Two barges broke loose from their towing vessels in the high seas and winds as Jeanne entered the Gulf of Mexico. One of the barges, an oil rig tender with sixteen people aboard, was carried along near the center of the storm for several hundred miles into the central Gulf of Mexico. Jeanne's turn toward the central Gulf was governed by the ridge to the north which blocked the northward progress of the storm. As the storm made a slow curve toward the west, it strengthened to a minimal hurricane during the morning of the 11th, and reached its maximum strength later in the day.

Meanwhile, on the fringes of the hurricane, a record-breaking rain deluged Key West, Florida. During the twenty-four hour period, 11/0600 GMT-12/0600 GMT, 23.28 inches of rain fell there, including a six-hour total of 13.58 inches. This

event was only indirectly associated with Jeanne, and damages caused by the flood are not considered to be directly storm-related. Satellite photos showed a band of strong convective cloudiness extending from the Caribbean Sea across the Florida Straits and Keys and spiralling into the storm's circulation. However, a separate meso-scale disturbance appears to have triggered the extreme localized rainfall at Key West.

As Jeanne crossed into the western Gulf, its forward speed slowed as the ridge to the north shifted eastward. Never a major hurricane, Jeanne reverted to tropical storm status during the evening of the 12th. The storm was predicted to turn toward the northwest and eventually recurve northeastward in advance of a developing trough over the southwestern states. In view of this, gale warnings were issued for the section of coast east of Port O'Connor, TX, to the mouth of the Mississippi River. However, the trough lagged to the west and Jeanne was left in a region of weak pressure gradient while a cold front advanced through Texas. The front entered the northwest Gulf on the 14th. Dry air was entrained by the storm which destroyed much of its convection, and Jeanne weakened to a tropical depression. The depression turned back to the east and remained distinct from the front until early on the 16th, when the two systems gradually merged.

Jeanne attained its maximum strength on the 12th, with highest winds of 85 knots and a minimum pressure of 986 millibars. These figures are estimates which represent a compromise among somewhat conflicting values derived from reconnaissance, ship, buoy and satellite data. For example, a Coast Guard ship, the USS Taney measured winds of 95 knots at 0000 GMT, November 12, while the central pressure and other data would suggest the sustained winds in the storm were somewhat less. The higher winds reported by the ship could have been a transient phenomenon associated with the heavy rainstorm the ship was experiencing at the time of the observation.

No reports of casualties attributable to Jeanne have been received. Tides of 2 to 4 feet above normal occurred along the Texas coast accompanied by a prolonged period of rough seas and heavy swells. However, only minor beach erosion was reported. An estimate of damage to barges and other vessels is not available at this time.

# HURRICANE JEANNE

## Preliminary Best Track

DATE	TIME (GMT)	LAT.	LONG.	PRESSURE (MB)	WIND (KT)	STAGE
11/07	1800	13.6	82.6	1008	20	Tropical disturbance.
11/08	0000	14.7	83.0	1006	20	
	0600	16.0	83.4	1006	20	
	1200	17.3	83.9	1006	25	
	1800	18.6	84.3	1005	30	Tropical depression.
11/09	0000	19.3	84.6	1005	30	
	0600	20.0	84.8	1004	30	
	1200	20.8	85.1	1000	40	Tropical storm.
	1800	21.3	85.2	999	45	
11/10	0000	21.6	85.3	999	50	
	0600	22.0	85.4	999	50	
	1200	22.5	85.5	999	50	
	1800	23.2	85.7	999	50	
11/11	0000	23.7	86.1	998	55	
	0600	24.1	86.5	997	60	
	1200	24.1	87.0	992	65	Hurricane
	1800	24.1	87.2	986	75	
11/12	0000	24.1	87.4	988	85	
	0600	23.9	88.3	992	70	
	1200	23.8	89.0	994	65	
	1800	23.8	89.8	995	65	
11/13	0000	24.0	90.3	999	55	Tropical storm.
	0600	24.9	91.6	997	55	
	1200	25.6	92.8	993	60	
	1800	25.6	94.0	994	60	
11/14	0000	25.5	95.0	996	55	
	0600	25.6	95.2	998	50	
	1200	25.8	95.2	1002	50	
	1800	26.0	94.8	1002	40	
11/15	0000	26.2	94.4	1004	30	Tropical depression.
	0600	26.3	93.7	1004	30	
	1200	26.2	93.2	1005	25	
	1800	25.9	92.9	1006	20	
11/16	0000	25.4	93.0	1007	20	
	0600	25.2	93.1	1007	20	

# HURRICANE KARL

25-27 November 1980

National Hurricane Center  
Miami, Florida

A Hatteras-type low pressure system developed near the southeast United States on 21 November, along a frontal zone. This low moved to just south of the Canadian Maritime Provinces by 1200 GMT on the 22nd, intensifying to below 1000 mb with several ship reports of 50 kt winds.

The low reached a position several hundred miles south of Cape Race, Newfoundland on the 24th. By this time the system had become quite large, carving out a surface circulation of over 600 n.mi. radius. A frontal occlusion process had also been in progress and this resulted in the appearance of a rather homogeneous air mass near the circulation center; cloudiness was somewhat suppressed and the horizontal temperature gradient was rather flat. Ship-reported air temperatures and sea surface temperatures in the area were around 20°C.

Early on the 25th, satellite pictures showed that a circular convective cloud mass about 100 n.mi. in diameter had formed near the low center. An eye-type feature was visible and this implies that a small tropical system had developed within the larger extratropical cyclone.

Satellite intensity estimates were at 65 kt, minimal hurricane force, by 1800 GMT on the 25th, at which time the system was centered 600 n.mi. west southwest of the Azores. Given the name Karl, the hurricane strengthened slightly for the next 24 hours. The central cloud mass became separated and distinct from the surrounding baroclinic cloudiness. Karl's maximum intensity

was estimated at 75 kt for the period 0600-1800 GMT on the 26th. A corresponding minimum sea level pressure of 985 mb was assigned based on available pressure-wind relationships.

On the 25th, when Karl was intensifying to a hurricane, its track described a very tight cyclonic loop. Karl was apparently rotating around within the larger-scale cyclone within which it was embedded. A major trough now was moving eastward from North America and developing into the primary cyclonic circulation over the North Atlantic. Karl responded with a large cyclonic turn, first toward the east and then northward, around the periphery of the new low to its west.

Karl passed within 200 n.mi. of the western-most Azores on the 27th, but had little or no impact on these islands. A ship, DGLU, came within 60 n.mi. northwest of the center at this time and reported a 993 mb sea level pressure, but only 30 kt winds.

By late on the 27th, the central cloud features were becoming less distinct, indicating some weakening. The system was moving northward by the 28th and it merged with frontal cloudiness associated with the approaching extratropical cyclone.

There have been several North Atlantic November hurricanes during this century, but none have been observed so far east in the Atlantic during the last ten days of the month.

## PRELIMINARY BEST TRACK

DATE	TIME (GMT)	LAT.	LONG.	PRESSURE (MB)	WIND (KT)	STAGE
11/25	0000	36.0	46.0	988	50	SUBTROPICAL STORM
	0600	36.8	44.8	988	50	
	1200	37.2	44.5	988	55	
	1800	37.7	44.7	988	65	
11/26	0000	37.4	44.8	988	70	HURRICANE
	0600	37.0	44.2	985	75	
	1200	36.8	42.5	985	75	
	1800	37.1	40.5	985	75	
11/27	0000	37.8	38.3	988	70	
	0600	38.9	36.5	990	65	
	1200	40.4	34.9	990	65	
	1800	42.3	33.1	990	65	
11/28	0000	45.0	32.0			EXTRATROPICAL



## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

NOVEMBER 1980

STATE	Temperature					Precipitation				
	Monthly extremes					Monthly extremes				
	Station	Highest °F	Date	Station	Lowest °F	Date	Station	Greatest In	Station	Least In
Alabama	Aliceville	84	1	2 Stations	19	30*	Aliceville	8.41	St Marys Airport	.02
Alaska	Admiral McMillan AP	67	1	Barrow	-49	23	Little Port Walter	37.09	109 Stations	.00
Arizona	Yuma WSO AP	96	1	Alpine	1	28*	Portal 4 SW	6.95	Huntsville	1.43
Arkansas	1 Station	8	14	Gilbert	1	20*	Bismarck 2 SE	8.43	150 Stations	
California	2 Stations	105	1	Bodie	-4	17*	Crescent City 7 ENE	2.10	Manassas	3.25
Colorado	Walsh 1 W	88	8	Antero Reservoir	28	20	Redstone 4 W	6.1	Shepaug Dam	2.29
Connecticut	Norwich Pub Util Plt	88	1	2 Stations	11	29	West Hartford	2.77	Gainesville 3 WSW	1.43
Delaware	Milford 2 WSW	84	1	2 Stations	20	21*	Newark University Farm	4.97	Fitzgerald	
Florida	9 Stations	101	2	2 Stations	20	29	Brussels 1000 AP	17.50	26 Stations	
Georgia	Thomaston 2S	84	10	Blairsville Exp Sta	18	21*	Brunswick FAA AP	6.63	Tecoma Exp Station	1.19
Hawaii	Ke-Ahole Pt 68,13	85	1	Mauna Loa Slope Obs	32	28*	Kukui 380	3.12	Canton 1 ESE	1.4
Idaho	Bruneau	83	1	Grouse	-11	25	Sandpoint KSPT	2.69	Decatur 1 N	2.10
Illinois	Waterloo	83	5	2 Stations	11	26*	Brookport Dam 52	1.46	22 Stations	.00
Indiana	2 Stations	80	1	2 Stations	12	26*	Newburgh Lock Dam	6.01	Lexington WSO AP	2.02
Iowa	2 Stations	81	6	3 Stations	6	25	Fayette	7.30	New Orleans Water Plt	1.29
Kansas	1 Station	81	8	Syracuse 2 W	-5	26	Moran	6.87	Fort Fairfield 5 NE	2.30
Kentucky	Gilbertsville Ky Dam	80	8	Gray Hawk	14	21	Cumberland Falls St Pk	4.08	Crisfield Somers Cove	
Kentucky	Vermilion Lock	80	10	Ashland 2 S	22	20	Delta-Breton WL Ref	5.15	Tauton	2.48
Maine	2 Stations	54	6*	West Buxton 2 NNW	3	26	Jonesboro	2.73	Sandusky	.49
Maryland	La Plata 1 W	74	8	Oakland 1 SE	12	20	Edgemont	2.19	2 Stations	.00
Massachusetts	1 Station	70	1	2 Stations	4	21	New Bedford	1.90	9 Stations	1.92
Michigan	Sanit Charles	80	1	Ironwood	-1	25	Munising	11.55	Shiloh	1.88
Minnesota	Lamberton SW Exp Sta	76	1	Wannaska 8 SE	-10	24	Baudette 21 SSE	1.95	8 Stations	.00
Mississippi	Bay St Louis NASA	80	10	2 Stations	23	21*	D'Lo	6.00	Riverbank	1.98
Missouri	Dora	88	8	2 Stations	8	25	Wappapello Dam	6.29	Canton 1 SW	1.43
Montana	Grass Range	81	1	Gallatin Gateway 26 SSW	-12	14	Troy 18N	1.20	2 Stations	.00
Nebraska	Beaver City	80	6	Agate 1 E	-13	17	Harrison	3.39	Put In Bay Perry Mon	
Nevada	2 Stations	90	1	Mountain City R S	-19	25	Eureka	2.63	Alva	.08
New Hampshire	Greenland	83	1	Mount Washington	-25	16	Mount Washington	23.49	2 Stations	.18
New Jersey	Tuckerton	73	14	2 Stations	13	21*	Long Branch Oakhurst	8.53	Sabinsville 3 SE	1.44
New Mexico	2 Stations	89	22	Eagle Nest	-8	26	Gascon	8.53	2 Stations	.00
New York	N Y Central Pk WSO CI	71	14	Old Forge	-3	17	Hooker 4 N	5.12	5 Stations	.00
North Carolina	High Point	84	9	Transou	10	20	Lake Toxaway 2 SW	1.25	Erwin 2 SW	1.66
North Dakota	2 Stations	74	6	Williston WSO AP	1	30	Warwick	5.16	Cornudas Service Sta	.05
Oklahoma	Ironton	78	8	3 Stations	10	26*	2 Stations	5.09	Church Wells	.00
Oklahoma	Buffalo	73	4	Hooker	1	26	Idabel	8.50	Rutland	2.06
Oregon	Dayville 8 NW	76	1	Lawson	-1	26	Laurel Mountain	5.15	Allisonia 2 S	1.47
Pennsylvania	2 Stations	76	22	3 Stations	8	24*	Corapolis Neville Is	3.93	Water Isle	1.10
Puerto Rico	Rincon Power Plant	90	11	Uruao	55	10*	Yabucoa 1 NNE	28.50	Sunnyside	.40
Rhode Island	Kingston	70	14	Kingston	14	17	North Foster 1 E	5.65	Corton	1.80
South Carolina	Sandhill Exp Station	84	9	Longcreek	17	19	Hogback Mountain	1.89	Neillsville 3 SW	.05
South Dakota	Percupine 16 NW	50	6	2 Stations	3	24	Deadwood	2.37	Bitter Creek 4 NE	.01
Tennessee	Huntingdon Water Plant	82	4	2 Stations	13	23*	Crossville Exp Sta.			
Texas	2 Stations	98	10*	Boys Ranch	-2	26	Jourdanton			
Utah	La Verkin	84	5	3 Stations	-4	25*	Alta			
Vermont	Dorset 1 S	62	8	Mount Mansfield	4	26	Mount Mansfield			
Virginia	Stony Creek	62	10*	Burkes Garden	10	20	Warrenton 3 SE			
Virgin Islands	Iruan Fld FAA AP	94	16	2 Stations	67	30*	Fountain			
Washington	Monroe	77	4	Laurier	-5	24	Spruce			
West Virginia	Spencer 1 SE	74	8	3 Stations	6	26	Pickens 1			
Wisconsin	2 Stations	68	74	3 Stations	4	26*	Oshkosh			
Wyoming	Shell	78	1	Darwin Ranch	-34	25	Alameda 17 NW			

## NOVEMBER 1990

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[illegible]



## NOVEMBER 1990

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# CLIMATOLOGICAL DATA

METRIC UNITS

NOVEMBER 1980

State and Station	Elevation (ground)	Pressure		Temperature				Precipitation				Wind				No. of days (sunrise to sunset)		Sky cover, tenths (sunrise to sunset)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
		Station Q	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	Date	Max 32.2 °C or above	Min. 0 °C or lower	No. of days	Average relative humidity	Total	Departure from normal		Greatest in 24 hours	With thunderstorms	No. of days	Snow, ice pellets	Resultant speed	Resultant direction	Fastest mile (1.6 kilometers)		Clear, 0-3	Partly cloudy, 4-7	Cloudy, 8-10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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## NOVEMBER 1981

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## NOVEMBER 1987

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## (BASE 65°F.)

1.  $\frac{1}{2} \leq \frac{1}{2} \leq \frac{1}{2}$  (1)

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# COOLING DEGREE DAYS

(Base 65°F.)

NOVEMBER 1986

State and station	Current season			State and station	Current season			State and station	Current season			State and station	Current season		
	This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month		This month	Period January through this month	Normals January through this month
ALABAMA				HAWAII				NEBRASKA				SOUTH CAROLINA			
ALBUQUERQUE	0	2257	2219	HILLO	269	3373	2861	GRAND ISLAND	0	1349	1036	CHARLESTON	5	2344	2378
ANNISTON	0	2225	1928	HONOLULU	395	4338	3951	LINCOLN	0	1497	1148	CHARLESTON U	12	2587	2347
BIRMINGHAM	1	1926	1808	KAHULUI	401	4434	3496	NORFOLK	0	1214	925	COLUMBIA	2	1964	2087
BIRMINGHAM	25	2805	2567	LIHUE	328	3598	3486	NORTH PLATTE	0	1054	802	GRNVILLE-SPRTNBRG	0	1737	1573
BIRMINGHAM	3	2415	2238					OMAHA (EPPELEY)	0	1264	1173				
FLORIDA				IDAHO				OMAHA (NORTH)	0	1310	949	SOUTH DAKOTA			
ANCHORAGE	0	0	0	EGUISE	0	504	714	SCOTTSDUFF	0	1044	866	ABERDEEN	0	403	566
ANNETTE	0	0	0	LEWISTON	0	564	657	VALENTINE	0	988	736	BURTON	0	757	711
BARKER	0	0	0	PCCATELLO	0	221	437					PAPID CITY	0	667	661
BARTER ISLAND	0	0	0					NEVADA				SIOUX FALLS	0	799	719
BELLEVILLE	0	0	0	ILLINOIS				ELKO	0	381	342				
BELLEVILLE	0	36	17	CAIRO U	3	2162	1806	ELY	0	208	207	TENNESSEE			
BIRMINGHAM	0	32	34	CHICAGO O'HARE	0	943	664	LAS VEGAS	15	3157	2946	BRISTOL	0	1202	1137
BIRMINGHAM	0	0	0	MOBILE	0	1080	897	RENO	0	397	329	CHATTANOOGA	1	1604	1636
BIRMINGHAM	0	0	0	PEORIA	0	1196	968	WINNEPUCCA	0	465	407	KNOXVILLE	0	1832	1569
BIRMINGHAM	0	14	52	ROCKFORD	0	462	714					MEMPHIS	18	2782	2029
BIRMINGHAM	0	0	0	SPRINGFIELD	0	1462	1116	NEW HAMPSHIRE				NASHVILLE	0	1948	1694
BIRMINGHAM	0	0	0					CONCORD	0	458	349	OAK RIDGE	0	1572	1367
BIRMINGHAM	0	0	0	INDIANA				MT WASHINGTON OBS	0	0	0				
BIRMINGHAM	0	0	0	EVANSVILLE	3	1726	1364					TEXAS			
BIRMINGHAM	0	0	0	FORT WAYNE	0	867	748	NEW JERSEY				ABILENE	21	2896	2466
BIRMINGHAM	0	0	0	INDIANAPOLIS	0	1177	974	ATLANTIC CITY	0	773	864	AMARILLO	0	1698	1433
BIRMINGHAM	0	0	0	SOUTH BEND	0	1018	695	ATLANTIC CITY U	0	1365	1024	AUSTIN	45	3218	2903
BIRMINGHAM	0	0	0					TRENTON U	0	1294	968	BROWNVILLE	0	4102	3797
BIRMINGHAM	0	0	0	IDAHO								CORPUS CHRISTI	54	3452	3437
BIRMINGHAM	0	0	0	DES MOINES	0	1267	928	NEW MEXICO				DALLAS FT WORTH	35	3269	2587
BIRMINGHAM	0	0	0	DEQUETTE	0	905	606	ALBUQUERQUE	0	1526	1316	DEL RIO	0	3673	3363
BIRMINGHAM	0	0	0	SIOUX CITY	0	1069	932	CLAYTON	2	1110	767	EL PASO	0	2509	2098
BIRMINGHAM	0	0	0	WATERLOO	0	900	675	POSWELL	1	2035	1560	GALVESTON	52	2993	2987
BIRMINGHAM	0	0	0									HOUSTON INTERCON	52	3317	2878
BIRMINGHAM	0	0	0	KANSAS				NEW YORK				LUBBOCK	3	2169	1647
BIRMINGHAM	0	0	0	CONCORDIA	4	1771	1332	ALBANY	0	583	574	MIDLAND	2	2000	2250
BIRMINGHAM	0	0	0	DODGE CITY	5	2072	1411	PINGHAMTON	0	532	369	PORT ARTHUR	37	3015	2790
BIRMINGHAM	0	0	0	GOODLAND	0	1139	925	PBUFFALO	0	607	437	SAN ANGELO	19	2618	2702
BIRMINGHAM	0	0	0	TOPEKA	0	1829	1361	NEW YORK U	0	1435	1068	SAN ANTONIO	51	3405	2967
BIRMINGHAM	0	0	0	WICHITA	1	2358	1673	NEW YORK KENNEDY	0	1148	861	VICTORIA	41	3243	3125
BIRMINGHAM	0	0	0					NEW YORK LA GUARDIA	0	1294	1048	WACO	39	3095	2863
BIRMINGHAM	0	0	0	KENTUCKY				ROCHESTER	0	744	531	WICHITA FALLS	7	2961	2611
BIRMINGHAM	0	0	0	COVINGTON	0	1183	1050	SYRACUSE	0	706	551				
BIRMINGHAM	0	0	0	LEXINGTON	0	1370	1197					UTAH			
BIRMINGHAM	0	0	0	LOUISVILLE	1	1739	1268	NORTH CAROLINA				MILFORD	0	596	688
BIRMINGHAM	0	0	0					ASHVILLE	0	1191	872	SALT LAKE CITY	0	678	927
BIRMINGHAM	0	0	0	LOUISIANA				CAPE HATTEPAS P	3	1726	1550				
BIRMINGHAM	0	0	0	BATON ROUGE	15	2681	2579	CHARLOTTE	0	1760	1596	VERMONT			
BIRMINGHAM	0	0	0	LAKE CHARLES	24	2721	2732	GREENSBORO	0	1458	1341	PURLINGTON	0	509	396
BIRMINGHAM	0	0	0	NEW ORLEANS	51	3206	2695	RALEIGH	6	1807	1394				
BIRMINGHAM	0	0	0	SHREVEPORT	22	2873	2538	WILMINGTON	2	2225	1964	VIRGINIA			
BIRMINGHAM	0	0	0									LYNCHBURG	0	1398	1110
BIRMINGHAM	0	0	0	MAINE								NORFOLK	1	1631	1441
BIRMINGHAM	0	0	0	CARIBOU	0	194	128	NORTH DAKOTA				PICHMOND	1	1729	1353
BIRMINGHAM	0	0	0	PORTLAND	0	466	252	BISMARCK	0	502	487	ROANOKE	0	1300	1030
BIRMINGHAM	0	0	0					FARGO	0	582	473	WALLOPS ISLAND	0	1190	1107
BIRMINGHAM	0	0	0	MARYLAND				WILLISTON	0	603	422				
BIRMINGHAM	0	0	0	BALTIMORE	0	1408	1108					WASHINGTON			
BIRMINGHAM	0	0	0					OHIO				OLYMPIA	0	45	101
BIRMINGHAM	0	0	0	MASSACHUSETTS				AKRON	0	765	634	QUILLAPUTE	0	11	4
BIRMINGHAM	0	0	0	BLUE HILL OBS R	0	637	457	CINCINNATI ABCE OB	0	1456	1188	SEATTLE	0	73	147
BIRMINGHAM	0	0	0	POSTON	0	916	661	CLEVELAND	0	705	613	SEATTLE-TACOMA	0	54	129
BIRMINGHAM	0	0	0	WORCESTER	0	497	387	COLUMBUS	0	1034	809	SPOKANE	0	227	788
BIRMINGHAM	0	0	0					DAYTON	0	1130	936	STAMPEDE PASS R	0	9	16
BIRMINGHAM	0	0	0	MICHIGAN				MANSFIELD	0	711	818	WALLA WALLA U	0	691	862
BIRMINGHAM	0	0	0	ALPENA	0	318	208	TOLEDO	0	772	685	YAKIMA	0	865	479
BIRMINGHAM	0	0	0	DETROIT	0	933	743	YOUNGSTOWN	0	486	518				
BIRMINGHAM	0	0	0	DETROIT METRO	0	696	654					WEST INDIES			
BIRMINGHAM	0	0	0	FLINT	0	476	438	OKLAHOMA				SAN JUAN P.R.	522	5923	4616
BIRMINGHAM	0	0	0	GRAND RAPIDS	0	681	575	OKLAHOMA CITY	11	2552	1876				
BIRMINGHAM	0	0	0	HOUGHTON LAKE	0	320	250	TULSA	6	2877	1949	WEST VIRGINIA			
BIRMINGHAM	0	0	0	LANSING	0	621	535					BECKLEY	0	632	490
BIRMINGHAM	0	0	0	MUSKEGON	0	492	469	OREGON				CHARLESTON	0	1143	1755
BIRMINGHAM	0	0	0	SAULT STE MARIE	0	99	139	ASTORIA	0	28	17	ELKINS	0	513	389
BIRMINGHAM	0	0	0					PURVIS U	0	94	289	HUNTINGTON	0	1310	1048
BIRMINGHAM	0	0	0	MINNESOTA				EUGENE	0	142	239	PARKERSBURG U	0	1074	1045
BIRMINGHAM	0	0	0	DULUTH	0	240	176	WEDPORT	0	522	562				
BIRMINGHAM	0	0	0	INTERNATIONAL FALLS	0	331	176	PENDLETON	0	417	656	WISCONSIN			
BIRMINGHAM	0	0	0	MINNEAPOLIS	0	774	585	PORTLAND	0	266	300	GREEN BAY	0	452	384
BIRMINGHAM	0	0	0	ROCHESTER	0	671	474	SALEM	0	120	232	LA CROSSE	0	1044	695
BIRMINGHAM	0	0	0	ST CLOUD	0	451	426	SEXTON SUMMIT P	0	170	137	MADISON	0	629	460
BIRMINGHAM	0	0	0									MILWAUKEE	0	484	450
BIRMINGHAM	0	0	0	MISSISSIPPI				PACIFIC AREA							
BIRMINGHAM	0	0	0	JACKSON	14	2643	2316	GUAM TAGUAC P	466	4758	4592	WYOMING			
BIRMINGHAM	0	0	0	MEMPHIS	4	2453	2231	JOHNSTON	466	5286	4695	CASPER	0	410	458
BIRMINGHAM	0	0	0					WOPR P	548	5627	5503	CHEYENNE	0	406	327
BIRMINGHAM	0	0	0	MISSOURI				WUJALEIN	519	5870	5649	LANDER	0	424	383
BIRMINGHAM	0	0	0	COLUMBIA REGIONAL	0	1849	1269	MAJURO	515	5652	5405	SHERIDAN	0	338	446
BIRMINGHAM	0	0	0	KANSAS CITY	0	1746	1285	PAGO PAGO	513	5347	4860				
BIRMINGHAM	0	0	0	ST JOSEPH	0	1593	1334	PONAPE R	511	5654	5168				
BIRMINGHAM	0	0	0	ST LOUIS	2	1964	1475	TRUK MOEN ISLAND	495	5573	5383				
BIRMINGHAM	0	0	0	SPRINGFIELD	1	1889	1382	WAKE	506	5447	5033				
BIRMINGHAM	0	0	0					YAP R	490	5410	5420				
BIRMINGHAM	0	0	0	MONTANA											
BIRMINGHAM	0	0	0	BILLINGS	0	675	459	PENNSYLVANIA							
BIRMINGHAM	0	0	0	GLASGOW	0	483	438	ALLENSTOWN	0	1207	772				
BIRMINGHAM	0	0	0	TREAT FALLS	0	305	339	FRIE	0	551	773				
BIRMINGHAM	0	0	0	HAVRE	0	329	395	HARRISBURG	0	1045	1025				
BIRMINGHAM	0	0	0	HELENA	0	161	256	PHILADELPHIA	0	1435	1104				
BIRMINGHAM	0	0	0	KALISPELL	0	63	117	PITTSBURGH	0	890	647				
BIRMINGHAM	0	0	0	MILES CITY	0	776	752	SCRANTON	0	859	608				
BIRMINGHAM	0	0	0	MISSOULA	0	125	188	WILLIAMSPORT	0	878	698				
BIRMINGHAM	0	0	0												
BIRMINGHAM	0	0	0	RHODE ISLAND											
BIRMINGHAM	0	0	0	BLOCK ISLAND	0	564	359								
BIRMINGHAM	0	0	0	PROVIDENCE	0	811	532								

# STORM SUMMARY

STATE	TORNADOES					HAILSTORMS				WINDSTORMS				LIGHTNING				HEAVY SNOWSTORMS AND BLIZZARDS				ICE STORMS				ALL OTHER			
	NUMBER	DAYS	DEATHS	INJURIES	* DAMAGE	DEATHS	INJURIES	* DAMAGE		DEATHS	INJURIES	* DAMAGE		DEATHS	INJURIES	* DAMAGE		DEATHS	INJURIES	* DAMAGE		DEATHS	INJURIES	* DAMAGE		DEATHS	INJURIES	* DAMAGE	
								PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS
Alabama	1	1																											
Alaska	1																												
Arizona	1																												
Arkansas	1																												
California	1																												
Colorado	1																												
Connecticut	1																												
Delaware	1																												
District of Columbia	1																												
Florida	1																												
Georgia	1																												
Hawaii	1																												
Idaho	1																												
Illinois	1																												
Indiana	1																												
Iowa	1																												
Kansas	1																												
Kentucky	1																												
Louisiana	1																												
Maine	1																												
Maryland	1																												
Massachusetts	1																												
Michigan	1																												
Minnesota	1																												
Mississippi	1																												
Missouri	1																												
Montana	1																												
Nebraska	1																												
Nevada	1																												
New Hampshire	1																												
New Jersey	1																												
New Mexico	1																												
New York	1																												
North Carolina	1																												
North Dakota	1																												
Ohio	1																												
Oklahoma	1																												
Oregon	1																												
Pennsylvania	1																												
Rhode Island	1																												
South Carolina	1																												
South Dakota	1																												
Tennessee	1																												
Texas	1																												
Utah	1																												
Vermont	1																												
Virginia	1																												
Washington	1																												
West Virginia	1																												
Wisconsin	1																												
Wyoming	1																												

## Average monthly values

NOVEMBER 1980

[illegible]

ATHENS, GA 991 M										BARTOW, AK 1014 M										BARTER ISLAND, AK 1011 M										BETHEL, AK 993 M										BISMARCK, ND 957 M									
SFC	30	246	5.7	2.1	36	1.2	30	9	-23.4	-22.3	08	4.6	27	15	-16.1	-18.8	09	4.1	29	39	-7.3	-8.8	04	4.0	30	503	-9.9	-4.5	28	1.2																			
1000	30						30	115	-19.7	-20.0	08	7.1	26	103	-15.7	-17.7	09	5.8	8	98	-5.6	-6.9																											
950	30	594	9.6	.5	32	1.7	30	50	-15.9	-19.0	10	10.8	27	485	-16.4	-18.3	09	7.9	29	385	-4.1	-5.9	04	3.7	23	599	-7.7	-3.8	30	2																			
900	30	1,043	8.7	-1.0	28	2.5	30	90	-15.1	-20.6	10	10.6	27	498	-14.6	-20.0	10	6.7	29	411	-6.8	-8.7	06	2.5	30	996	2.2	-4.8	30	8.3																			
850	30	1,515	7.5	-5.4	26	4.6	30	1,361	-15.3	-22.0	10	9.0	27	1,328	-13.5	-19.6	10	5.1	26	1,259	-6.9	-13.3	10	1.6	30	1,458	1.5	-9.5	31	9.6																			
800	30	2,211	-7.7	-9.2	27	6.4	30	2,098	-15.6	-23.1	09	7.4	27	1,788	-15.1	-20.7	10	4.2	29	1,713	-16.8	-11.1	10	1.9	30	1,984	-2.7	-11.4	31	10.9																			
750	30	2,541	4.5	-11.9	27	8.5	30	2,282	-18.2	-26.6	10	6.1	27	2,275	-16.7	-23.2	17	2.5	29	2,227	-12.3	-20.9	12	1.4	30	2,457	-3.6	-15.3	31	12.0																			
700	30	3,120	1.8	-12.9	26	11.0	30	2,795	-20.7	-29.3	10	4.9	27	2,791	-19.1	-25.6	14	7.29	2	2,751	-15.4	-25.5	11	.9	30	2,999	-6.8	-18.9	31	13.0																			
650	30	3,695	-8.8	-16.6	26	13.2	30	3,340	-23.2	-32.4	11	3.9	27	3,340	-21.9	-29.7	25	6.29	3	3,307	-19.1	-29.3	11	1.0	30	3,574	-10.4	-21.7	30	14.3																			
600	30	4,329	-4.8	-20.3	26	15.5	30	3,922	-26.8	-35.7	12	2.6	27	3,925	-25.5	-33.9	27	2.5	29	3,898	-22.4	-33.3	12	1.3	30	4,185	-14.4	-27.4	30	15.3																			
550	30	5,011	-7.9	-24.7	26	18.9	30	4,545	-30.8	-39.2	16	1.5	27	4,551	-29.8	-38.2	26	4.3	29	4,530	-27.3	-37.8	15	1.3	30	4,840	-18.8	-28.6	29	16.8																			
500	30	5,748	-10.8	-27.2	26	21.4	30	5,216	-43.5	-51.2	21	2.4	27	5,224	-39.4	-48.0	26	6.0	29	5,209	-37.0	-42.6	14	1.4	30	5,544	-22.7	-31.4	30	17.9																			
450	30	6,535	-18.5	-30.7	26	24.1	30	5,941	-40.7	-47.2	23	3.0	27	5,953	-39.3	-46.5	26	2.6	29	5,933	-37.9	-46.1	21	.8	30	6,108	-28.1	-37.6	29	20.9																			
400	29	7,403	-24.8	-37.2	26	26.4	30	6,734	-46.1		24	8.4	27	6,750	-44.7		26	11.5	29	6,745	-44.0		21	3.7	29	7,142	-33.9	-41.1	30	22.7																			
350	29	8,354	-31.7	-44.1	26	29.9	30	7,614	-51.9		24	5.3	27	7,635	-50.5		26	14.1	29	7,632	-50.0		21	4.3	29	8,068	-40.5	-43.3	30	25.5																			
300	29	9,433	-39.9	-48.3		33.4	30	8,598	-56.9		23	6.7	26	8,622	-55.5		26	14.6	29	8,626	-55.8		22	5.7	29	9,099	-47.8		30	27.9																			
250	29	10,656	-48.5		26	37.7	30	9,750	-57.4		23	7.5	26	9,777	-57.6		25	13.7	29	9,767	-56.5		22	5.8	29	10,284	-54.3		30	30.3																			
200	29	12,097	-56.2		26	56.1	30	11,185	-55.6		23	7.6	26	11,212	-55.8		25	10.9	29	11,202	-54.9		22	6.1	29	11,722	-52.0		30	33.9																			
175	29	12,937	-60.0		26	59.4	30	12,017	-55.2		23	7.5	25	12,055	-54.2		24	9.6	27	12,055	-53.1		22	1.7	29	12,543	-56.8		29	29.1																			
150	29	13,972	-63.2		26	36.4	29	13,009	-54.6		23	8.3	25	13,044	-53.9		25	1.2	27	13,049	-52.7		22	7.4	27	13,521	-56.8		29	26.5																			
125	29	15,004	-66.5		26	31.0	25	14,176	-55.0		23	8.8	24	14,218	-54.3		24	9.5	27	14,227	-52.6		23	7.7	27	14,673	-58.0		29	24.3																			
100	29	16,344	-69.4		27	24.8	29	15,601	-55.2		23	9.9	23	15,659	-54.3		24	11.0	26	15,679	-52.5		23	8.1	27	16,078	-58.5		29	16.8																			
80	29	17,679	-68.2		27	16.1	28	17,028	-55.7		23	10.1	23	17,087	-55.0		25	11.8	26	17,121	-52.7		23	8.3	27	17,477	-59.4		29	14.2																			
60	29	18,949	-66.2		27	11.3	27	18,185	-55.4		23	11.3	23	18,247	-55.4		24	12.2	26	18,272	-52.9		23	9.6	26	18,722	-59.0		29	11.0																			
40	27	19,943	-63.9		27	10.4	25	17,885	-55.9		23	13.4	21	18,915	-53.8		24	13.8	25	18,972	-53.1		23	8.5	24	19,290	-59.4		29	10.5																			
30	27	20,549	-61.4		27	11.4	21	20,119	-54.8		24	14.4	21	20,073	-56.6		25	14.2	25	20,146	-53.3		23	10.1	22	20,426	-59.3		29	8.3																			
20	27	21,941	-58.7		27	10.6	17	21,602	-54.7		24	16.3	16	21,529	-57.4		24	15.4	23	21,567	-53.5		23	11.2	21	21,833	-58.6		30	6.5																			
10	27	23,753	-55.5		27	10.6	14	23,446	-55.3		25	20.2	13	23,734	-58.1		25	16.6	22	23,411	-53.4		24	11.2	20	23,642	-58.0		31	6.7																			
5	27	24,931	-53.9		27	14.7	8	24,350	-57.1		25	13	24,491	-59.1		26	18.1	20	24,630	-52.4		24	12.1	18	24,797	-57.6		31	6.4																				
0	27	26,355	-52.3		27	21.7	0	26,085	-58.2		25	10	26,315	-59.1		27	21.9	17	26,456	-52.9		25	13	17	26,622	-57.9		31	7.5																				
15	24	28,244	-49.8		27	21.9					27	9	27,492	-59.7		27	12	27,022	-52.4		26	17.3	14	28,025	-57.0		31	7.7																					
10	20	30,889	-47.6		27	30.5						5	30,462	-59.6							26	12	30,607	-55.9		30	30.0		30	10.0																			

		BOISE, ID 921 M										BOOTHVILLE, LA 1019 M										BROWNSVILLE, TX 1018 M										BUFFALO, NY 991 M										CAPE HATTERAS, NC 1019 M									
SFC	33	871	1.8	-2.5	13	1.2	27	1	14.0	11.6	05	2.0	29	7	13.6	11.7	35	1.6	33	218	2.3	-2.3	26	2.8	30	4	10.7	5.9	35	2.7																					
1000									27	158	15.1	10.2	04	3.1	29	16.6	12.5	36	1.6	5	232			30	30	160	11.5	6.3	35	3.5																					
950									27	592	12.7	6.2	07	2.7	29	597	14.4	4.8	04	1.8	30	558	.8	-4.1	26	6.4	30	588	9.8	3.3	32																				
900	30	1,051	4.6	-1.8	13	1.1	27	1,344	11.1	-.9	10	1.1	29	1,054	13.2	4.2	03	1.4	30	990	-1.4	-7.4	27	8.5	30	1,036	7.9	-.8	29	4.3																					
850	30	1,527	4.3	-4.1	22	1.4	27	1,522	11.3	-6.4	25	1.1	29	1,533	11.6	7.33	.9	10	1,444	-3.1	-10.8	27	10.1	30	1,506	6.6	-5.1	27	6.5																						
800	30	2,019	2	-7.3	26	4.1	27	2,227	11.2	-5.6	23	2.4	29	2,039	12.2	8.2	32	10	1,920	-1.2	-13.1	26	11.2	30	2,003	5.9	-8.4	27	8.9																						
750	30	2,519	4.7	-12.0	28	5.4	27	2,561	7.4	-7.8	25	4.2	29	2,575	8.4	-5.1	27	1	2,420	6.6	-16.4	26	12.4	30	2,529	4.8	-11.3	28	11.2																						
700	30	3,007	-3.5	-16.2	27	7.6	27	3,126	5.1	-10.7	24	6.6	29	3,193	5.8	-8.4	25	5.4	3,0	2,966	-8.9	-20.5	26	13.9	30	3,026	1.0	-13.6	27	13.3																					
650	30	3,559	-7.0	-19.9	27	9.8	27	3,728	2.7	-14.8	24	7.7	29	3,746	2.4	-11.3	25	7.2	3,0	3,538	-11.3	-23.9	28	15.4	30	3,679	-1.7	-17.2	27	16.3																					
600	30	4,289	-10.8	-22.6	27	12.2	27	4,370	1.4	-18.9	25	9.6	29	4,389	1.0	-17.0	25	7.5	3,0	4,148	-14.5	-26.9	28	18.2	30	4,313	-.9	-19.7	27	20.0																					
550	30	4,953	-15.0	-26.1	27	14.7	27	5,059	-.5	-22.7	25	12.1	29	5,076	-4.7	-21.3	26	8.3	3,0	4,803	-18.2	-29.8	28	19.3	30	4,972	-8.7	-22.5	27	22.5																					
500	30	5,657	-19.3	-29.6	27	17.1	27	5,789	1.0	-26.3	25	14.1	29	5,821	-9.7	-27.0	26	9.3	3,0	5,404	-22.6	-33.1	28	21.3	30	5,912	-12.2	-26.7	27	25.0																					
450	30	6,444	-24.2	-32.6	27	19.7	27	6,601	-16.3	-30.9	25	15.8	29	6,637	-15.1	-31.5	25	10	6,207	-24.2	-37.5	28	23.0	30	6,519	-18.2	-31.3	27	29.3																						
400	30	7,292	-33.1	-38.3	27	21.9	25	7,477	-22.7	-36.3	24	18.9	29	7,504	-22.2	-37.3	25	12.1	3,0	7,111	-33.8	-42.8	28	25.6	31	7,388	-24.4	-36.6	27	32.6																					
350	30	8,232	-37.0	-41.9	27	23.0	26	8,466	-29.7	-43.7	24	21.8	29	8,474	-29.4	-43.0	25	14.8	3,0	8,037	-40.1	-.4	27	26.3	30	8,350	-31.3	-42.9	27	35.0																					
300	30	9,278	-45.0	-49.9	29	26.4	26	9,524	-38.1	-49.6	24	22.8	29	9,553	-37.7	-49.3	25	17.5	29	9,074	-46.9		27	34.2	30	9,422	-39.0	-48.5	27	39.1																					
250	29	10,473	-53.5		29	29.9	26	10,757	-46.6		23	24.9	29	10,746	-46.5		25	21.2	29	10,767	-52.1		27	37.0	30	10,649	-47.4		27	42.9																					
200	29	11,975	-58.6		28	31.4	26	12,278	-56.1		24	31.3	28	12,235	-56.0		25	27.4	29	11,702	-54.5		27	36.4	29	12,100	-55.3		27	48.8																					
150	28	12,773	-59.5		28	29.5	25	12,744	-61.1		24	27.2	28	12,705	-60.4		25	24.6	29	12,557	-55.3		27	36.3	29	12,945	-59.0		27	55.3																					
100	28	13,677	-60.1		28	25.7	26	13,595	-65.1		24	25.8	28	14,233	-65.1		25	22.4	28	13,540	-56.7		27	30.5	29	13,904	-62.3		27	40.5																					
50	27	14,373	-61.4		27	22.3	25	15,130	-69.1		25	24.3	25	15,124	-69.1		25	20.0	28	14,692	-58.5		27	26.1	28	15,019	-65.1		27	34.9																					
0	26	16,234	-62.2		27	17.4	25	16,425	-71.1		25	16.7	28	16,443	-72.9		25	15.7	27	16,095	-59.4		27	25.7	28	16,370	-67.6		27	26.3																					
	25	17,584	-62.0		28	14.9	25	17,746	-73.6		25	13.4	27	17,746	-72.6		26	9	17,492	-59.7		27	19.7	28	17,715	-66.8		27	17.3																						
	24	18,411	-61.2		28	11.4	24	18,555	-68.6		25	10.1	25	18,535	-69.5		25	6.2	17,827	-60.1		27	15.0	28	18,530	-64.8		27	13.6																						
	23	19,359	-61.1		28	10.1	24	19,778	-68.7		24	8.9	24	19,778	-68.7		24	2.8	17,947	-64.9		27	13.6	28	19,359	-61.1		27	13.6																						
	22	20,532	-59.8		29	6.5	24	20,631	-61.0		25	7.5	25	20,587	-61.7		24	2.9	20,428	-59.8		27	11.4	25	20,601	-60.4		28	11.1																						
	21	21,923	-59.4		29	5.6	23	22,002	-57.7		26	4.9	24	21,840	-58.1		20	9	21,624	-59.3		28	11.6	25	22,001	-58.2		28	11.4																						
	20	23,744	-57.1		31	4.2	23	23,837	-54.6		27	5.7	24	23,897	-54.1		25	1.9	23,133	-58.2		27	8.7	24	23,626	-54.7		27	12.4																						
	19	24,898	-56.9		32	4.4	23	25,313	-52.6		27	9.3	24	24,985	-52.0		30	1.6	24,788	-57.5		27	10.1	24	24,997	-53.9		27	14.2																						
	18	25,372	-56.6		35	6.4	23	26,462	-49.4		27	7.2	23	26,432	-49.2		27	4	26,203	-56.4		27	13.8	24	26,444	-52.3		27	18.0																						
	17	26,153	-55.4				23	26,263	-49.4		27	2.1	23	26,263	-49.4		27	15	26,061	-45.7		27	15.0	24	26,311	-55.4		27	22.2																						
	16						17	31,096	-41.7		27	25.6	16	31,072	-40.9		27	17.6	11	30,445	-53.0		17	17.8	12	30,975	-47.3		27																						



# RAWINSONDE DATA

Average monthly values

NOVEMBER 1980

HARTFORD, CT 1011										CHIMUAHUA, MEXICO 860									
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction ten of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction ten of deg	Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind Direction ten of deg	Speed m.p.s.	No. of observations
1000	1	191	-1.7	-4.5	30	1.8	1	148	7.1	5.9	01	1	30	13	6.9	6.9	01	1	30
950	30	495	-2.4	-6.1	30	1.8	30	598	10.4	7.4	03	1	30	162	10.4	7.4	03	1	30
900	30	788	-3.1	-6.3	31	5.7	30	1,047	8.3	-5.4	24	1.7	30	1,144	10.9	-4.2	12	1.0	30
850	30	1,377	-4.3	-9.3	30	6.1	30	1,733	6.7	-5.3	26	3.8	30	1,822	10.4	-3.4	25	3.8	30
800	30	1,853	-6.1	-12.3	30	7.4	30	2,019	5.1	-8.4	26	5.5	30	2,022	8.2	-6.8	25	6.0	30
750	30	2,356	-8.3	-15.7	28	8.2	30	2,114	5.1	-11.4	26	7.4	30	2,553	8.2	-10.0	26	7.4	30
700	30	2,852	-12.2	-19.1	24	9.4	30	2,108	2.7	-14.7	26	8.7	30	2,949	-6.1	-17.3	28	13.6	30
650	30	3,459	-13.3	-23.7	28	11.7	30	2,704	-1.7	-17.3	26	10.2	30	3,714	-7.7	-16.4	27	12.5	30
600	30	4,054	-16.6	-24.1	28	12.7	30	3,174	-4.7	-20.3	17	13.2	30	4,353	-2.6	-18.9	27	15.7	30
550	30	4,714	-20.3	-27.1	27	15.0	30	3,020	4.1	-22.8	26	16.3	30	5,137	-6.4	-22.6	27	14.1	30
500	30	5,411	-24.9	-33.7	27	15.0	30	3,754	-12.1	-27.4	26	18.4	30	5,777	-11.1	-27.4	27	21.7	30
450	30	6,174	-29.1	-38.1	27	17.0	30	4,416	-37.7	-32.6	26	20.4	30	6,576	-17.7	-31.0	27	21.0	30
400	30	6,925	-34.7	-47.7	27	18.4	30	5,181	-44.6	-37.7	26	24.1	30	7,449	-23.1	-36.8	27	24.9	30
350	30	7,624	-41.4	-57.7	27	22.7	26	6,377	-31.4	-44.5	26	27.2	30	8,415	-30.4	-43.0	26	29.8	30
300	30	8,352	-48.1	-67.7	27	24.2	28	6,448	-39.7	-49.6	25	31.4	30	9,491	-38.3	-47.8	26	33.7	30
250	30	9,037	-52.7	-77.7	27	28.0	28	10,673	-47.9	-57.9	25	36.2	30	10,722	-47.7	-57.9	25	40.7	30
200	30	11,576	-53.6	-87.7	27	28.1	27	11,114	-56.1	-67.7	25	37.7	30	12,146	-56.5	-67.7	25	45.7	30
175	30	12,474	-53.6	-97.7	27	28.1	27	12,554	-67.7	-77.7	25	36.1	30	13,608	-60.7	-77.7	25	44.7	30
150	30	13,474	-53.1	-107.7	27	23.3	27	13,910	-67.1	-87.7	26	32.1	30	15,959	-64.2	-87.7	26	37.7	30
125	30	14,598	-54.5	-117.7	27	20.7	27	15,020	-67.1	-97.7	26	28.4	30	15,067	-67.4	-97.7	26	32.0	30
100	30	15,741	-55.5	-127.7	27	17.0	26	16,357	-69.4	-107.7	26	21.7	30	16,404	-69.1	-107.7	26	24.2	30
75	30	17,440	-57.1	-137.7	27	15.0	26	17,687	-68.6	-117.7	26	17.7	30	17,736	-68.8	-117.7	26	15.7	30
50	30	19,234	-57.1	-147.7	27	13.4	26	18,491	-66.7	-127.7	26	11.8	28	18,540	-66.6	-127.7	26	11.8	28
25	30	21,028	-57.1	-157.7	27	11.8	26	20,609	-60.5	-137.7	26	11.2	28	20,609	-60.5	-137.7	26	11.2	28
0	30	21,915	-57.3	-167.7	27	9.4	26	22,009	-59.1	-147.7	27	9.4	28	22,009	-59.1	-147.7	27	10.4	28
	30	22,529	-57.3	-177.7	27	9.0	25	23,759	-55.8	-157.7	27	12.7	27	23,841	-54.7	-157.7	27	10.3	27
	30	23,471	-57.6	-187.7	27	10.4	22	24,922	-54.6	-167.7	27	14.9	26	25,011	-52.2	-167.7	27	11.9	26
	30	24,413	-57.6	-197.7	27	12.2	22	26,073	-54.6	-177.7	27	15.7	25	26,162	-52.2	-177.7	27	16.8	25
	30	25,355	-57.6	-207.7	27	14.1	22	28,229	-50.3	-187.7	27	18.6	22	28,322	-50.3	-187.7	27	21.8	22
	30	26,297	-58.4	-217.7	27	15.0	19	30,905	-46.1	-197.7	27	21.8	9	31,125	-44.4	-197.7	27	21.8	9
	30	27,239	-58.4	-227.7	27	15.0	19	31,145	-44.4	-207.7	27	21.8	9	31,125	-44.4	-207.7	27	21.8	9

## Average monthly values

14.  $\frac{1}{2} + \frac{1}{3} = \frac{5}{6}$

* INTERNATIONAL FALLS, MN 972 MB						JACKSON, MN 1009 MB						JOHNSON IS., PACIFIC AREA 1014 MB						KEY WEST, FL 1016 MB						KING SALMON, AK 994 MB					
55C	30	355	-4.3	-5.9	27	30	100	7.1	5.6	11	-5.30	3	26.4	23.6	08	6.0	10	3	22.8	20.0	06	3.3	29	15	-2.5	-5.5	04	.9	
135D	30					27	20	169	9.8	5.4	08	-5.10	17	127	25.5	09	6.9	10	22.9	19.2	06	4.4	29	10	-4	-9.4			
95D	30	540	-3.2	-6.3	25	2.2	30	559	11.1	2.6	03	1.30	57.2	15.2	09	6.9	10	58.0	15.2	06	4.9	29	37.2	-1.5	-5.6	08	2.2		
920	30	958	-3.3	-9.6	27	4.4	30	1,045	9.6	-6.7	2.2	30	1,039	18.4	15.2	09	8.7	13	1,048	17.1	12.18	12	2.6	29	80.2	-4.8	-7.4	09	2.7
850	30	1,419	-4.0	-12.6	29	5.8	30	1,519	8.3	-3.4	28	2.6	30	1,528	15.8	10.0	8.4	30	1,536	15.7	8.2	17	2.7	29	1,254	-4.9	-10.7	10	2.0
830	30	1,697	-5.5	-14.5	29	7.6	30	2,019	7.4	-6.2	20	4.0	30	2,042	13.5	6.0	10	7.8	2,050	13.3	5.5	19	3.4	29	1,728	-7.4	-14.0	13	2.2
750	30	2,891	-7.5	-18.0	29	9.7	30	2,549	5.6	-10.5	26	6.3	30	2,585	12.4	-3.2	10	7.1	2,591	11.0	.4	21	4.0	29	2,229	-10.2	-17.5	14	2.3
730	30	2,916	-9.8	-20.8	29	11.1	30	2,110	2.7	-14.4	26	7.7	30	3,161	10.3	-7.2	09	6.6	2,165	8.2	-4.4	22	4.6	29	2,157	-11.9	-21.0	15	1.7
55D	30	3,535	-12.9	-23.0	26	12.9	30	3,736	3.3	-16.6	27	9.1	30	3,775	7.3	-10.5	09	6.2	3,773	9.9	-8.6	23	4.8	29	3,316	-17.7	-26.0	18	1.2
620	30	4,112	-11.3	-26.5	29	23.1	30	4,112	1.7	-20.0	4.5	3.7	30	5,72	37.6	6.0	09	6.5	4,112	1.7	-16.6	23	5.9	30	3,911	-21.2	-29.9	19	1.4
550	30	4,751	-20.2	-30.2	25	15.4	30	5,025	-7.4	-29.1	26	13.6	30	5,127	-9.9	-17.3	08	6.8	5,116	-3.1	-15.4	23	6.1	29	4,548	-25.5	-35.2	20	1.8
500	30	5,451	-24.6	-34.4	26	17.7	30	5,761	-12.3	-27.9	26	15.7	30	5,881	-5.7	-21.8	08	6.1	5,864	-7.6	-19.5	24	7.3	29	5,232	-30.5	-41.0	19	3.3
450	29	6,219	-30.2	-39.0	29	20.1	30	6,558	-17.8	-31.4	26	18.6	30	6,701	-11.1	-27.1	07	5.7	6,677	-12.8	-22.9	24	8.9	29	5,973	-36.1	-43.2	20	3.9
400	29	7,007	-36.4	-43.6	28	22.3	30	7,428	-29.3	-37.0	26	21.1	30	7,595	-17.6	-32.6	06	4.6	7,565	-18.5	-30.5	24	10.5	29	6,780	-42.4	-48.2	20	3.9
350	29	7,953	-43.0	-43.5	28	24.6	30	8,391	-31.3	-43.3	26	23.7	29	8,583	-24.3	-38.5	05	4.9	8,550	-25.4	-36.5	24	12.7	29	7,672	-48.6		22	4.1
300	29	8,983	-50.2		28	26.9	30	9,462	-39.2	-46.0	26	28.0	29	9,685	-32.8	-48.4	02	2.3	9,647	-33.8	-44.3	24	16.4	29	8,670	-53.4		23	8.8
250	29	10,157	-55.2		29	29.1	30	10,332	-50.7	-57.6	26	31.0	29	10,424	-24.0	-42.4	01	3.2	10,399	-44.4	-46.4	24	18.9	29	9,835	-58.9		23	6.6
200	29	11,571	-58.1		29	27.9	30	12,132	-55.5		25	33.9	29	12,414	-40.4	-60.0	27	7.1	12,358	-55.9		24	23.4	29	11,264	-53.5		24	7.9
175	29	12,426	-55.2		29	25.6	30	12,972	-60.0		25	33.2	28	13,257	-60.3		28	9.2	13,195	-62.1		25	24.9	29	12,125	-53.4		23	8.3
150	29	13,412	-55.5		29	23.5	29	13,929	-63.5		26	29.8	29	14,202	-67.2		29	5.1	14,133	-68.6		25	24.2	29	13,119	-52.6		24	9.3
125	29	14,574	-55.7		29	21.3	29	15,040	-67.1		26	25.0	27	15,287	-74.1		28	7.0	15,212	-73.1		26	19.2	29	14,297	-52.6		24	9.5
100	29	15,992	-56.8		29	16.9	28	16,378	-69.9		26	21.1	26	16,565	-78.7		31	1.4	16,511	-75.6		26	12.3	29	15,738	-53.1		24	11.6
75	29	17,402	-57.9		29	13.7	27	17,737	-69.9		26	15.3	26	17,839	-77.6		30	3.9	17,802	-75.2		26	6.8	29	17,177	-53.1		24	10.6
50	29	18,298	-57.8		29	11.4	26	18,504	-67.1		26	12.6	24	18,616	-73.6		30	1.0	18,581	-72.6		26	1.8	29	18,058	-53.1		24	11.3
25	29	19,221	-58.2		29	9.9	26	19,425	-67.1		26	10.2	23	19,537	-68.4		14	1.0	19,498	-67.0		26	3.1	27	19,039	-53.0		24	11.4
0	29	20,354	-58.5		29	9.4	26	20,559	-67.1		26	9.2	21	20,641	-63.7		14	.9	20,610	-62.4		24	1.2	26	20,221	-53.1		24	10.7
	40	21,778	-58.5		29	6.6	25	21,949	-59.0		26	10.4	22	22,021	-60.3		10	1.7	22,004	-58.1		35	.5	26	21,657	-53.7		25	12.0
	30	23,531	-58.3		31	5.2	24	23,765	-55.6		26	13.1	22	23,834	-55.3		30	5.7	23,836	-53.5		34	.8	23	23,544	-53.5		26	9.9
	25	17,749	-58.5		32	8.1	23	24,931	-52.0		27	13.5	22	25,004	-52.7		30	4.7	25,013	-51.8		31	1.0	22	24,718	-52.4		26	12.6
	20	16,747	-58.2		31	8.2	21	23,369	-54.7		27	15.4	22	26,463	-48.8		30	8.7	26,476	-49.3		34	1.7	20	26,173	-52.1		27	10.2
	15	17,951	-57.5		31	8.2	21	24,233	-50.7		27	20.2	22	28,353	-46.7		30	10.3	28,373	-45.7		34	2.0	17	26,061	-51.2		27	10.1
	10				31	8.2	21	24,070	-50.7		27	20.2	22	28,353	-46.7		30	10.3	28,373	-45.7		34	2.0	17	26,061	-51.2		27	10.1
	5				35	33.332	-49.9				19	33.881	-39.6				10	10.2				24	4.6	11	30,824	-51.2		29	7.2







# RAWINSONDE DATA

Average monthly values

NOVEMBER 1980

HOME, AK 1070 MB												NORTH PLATTE, NE 921 MB												OAKLAND, CA 1071 MB												OMAHA, NE 971 MB												PAGO PAGO, AMERICAN SAMOA 1010 MB											
Standard pressure surface mb												Standard pressure surface mb												Standard pressure surface mb												Standard pressure surface mb												Standard pressure surface mb											
No. of observations												No. of observations												No. of observations												No. of observations												No. of observations											
Dynamic height meters												Dynamic height meters												Dynamic height meters												Dynamic height meters												Dynamic height meters											
Temperature °C												Temperature °C												Temperature °C												Temperature °C												Temperature °C											
Dew Point °C												Dew Point °C												Dew Point °C												Dew Point °C												Dew Point °C											
Direction tenths of deg.												Direction tenths of deg.												Direction tenths of deg.												Direction tenths of deg.												Direction tenths of deg.											
Speed m.p.s.												Speed m.p.s.												Speed m.p.s.												Speed m.p.s.												Speed m.p.s.											
5FC 30	5	-6.6	-11.1	06	1.8	30	847	-2.0	-6.1	33	1.2	30	6	9.9	7.0	04	1.1	30	403	1.7	-2.7	28	1.9	30	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
1300 30	4	-5.3	-9.9	08	1.2	30	847	-2.0	-6.1	33	1.2	30	178	12.3	5.2	36	2.5	30	403	1.7	-2.7	28	1.9	30	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
950 30	4	-5.3	-9.9	08	2.6	30	847	-2.0	-6.1	33	1.2	30	609	12.7	5.3	33	2.7	30	574	3.8	-2.7	29	1.9	30	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
900 30	3	-7.1	-11.8	11	1.8	30	1,030	2.9	-4.1	31	3.2	30	1,062	12.0	-4.3	33	2.8	30	1,015	5.2	-6.5	29	1.9	30	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
850 30	3	-8.5	-13.9	12	2.2	30	1,496	5.0	-7.5	31	6.2	30	1,539	10.2	-8.4	31	3.2	30	1,481	3.9	-10.5	30	6.8	30	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
800 30	3	-10.9	-16.9	13	2.3	30	1,989	3.1	-11.2	31	7.1	30	2,072	8.3	-13.6	30	4.3	30	1,972	1.8	-12.8	30	7.5	30	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
750 30	3	-13.6	-21.8	14	2.1	30	2,510	5	-13.1	31	8.0	30	2,572	5.7	-13.4	29	5.5	30	2,490	-7.8	-14.4	30	8.4	30	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
700 30	3	-15.8	-26.8	17	2.2	30	3,363	-2.7	-16.7	30	9.3	30	3,133	2.6	-17.2	28	6.6	30	3,037	-3.9	-17.2	29	9.2	30	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
650 30	3	-20.4	-30.2	17	2.9	30	3,684	-5.9	-19.4	30	11.0	30	3,728	-1.0	-15.1	28	8.6	30	3,619	-6.8	-21.0	29	10.5	30	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
600 30	3	-24.4	-34.2	20	3.1	30	4,267	-9.5	-22.6	29	11.3	30	4,361	-5.2	-20.5	28	10.1	30	4,239	-10.0	-24.9	29	12.9	30	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
550 30	4	-28.6	-37.5	21	3.7	30	4,933	-14.0	-25.7	29	12.4	30	5,040	-9.5	-24.3	28	12.7	30	4,904	-14.6	-27.0	29	14.9	30	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
500 30	5	-33.5	-41.5	21	4.4	30	5,650	-18.7	-31.2	29	14.4	30	5,769	-14.5	-29.0	28	13.7	30	5,619	-19.4	-32.1	29	17.0	30	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
450 30	5	-38.4	-45.9	21	4.7	30	6,426	-24.3	-35.7	29	16.1	30	6,559	-20.7	-32.6	28	14.9	30	6,394	-24.8	-38.2	29	18.4	30	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
400 30	6	-43.7	-44.7	22	5.5	30	7,277	-30.5	-41.1	29	17.5	30	7,421	-26.8	-38.4	28	16.3	30	7,240	-31.1	-44.0	29	19.7	30	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
350 30	7	-49.1	-50.8	22	6.5	30	8,215	-37.5	-45.1	29	20.2	29	8,372	-33.7	-44.0	28	19.0	30	8,175	-38.5	-45.7	29	21.5	30	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
300 30	8	-56.4		22	8.1	30	9,255	-45.4		29	20.4	29	9,432	-42.1	-51.2	29	21.0	29	9,219	-46.2		29	22.4	30	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
250 30	7	-57.4		21	9.6	29	10,445	-53.5		29	21.6	29	10,641	-51.3		29	23.1	27	10,411	-53.5		28	23.6	30	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
200 30	11	-57.3		22	10.0	29	11,855	-57.4		28	22.2	29	12,066	-58.4		28	24.8	26	11,820	-57.5		28	25.3	30	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
175 30	12	-57.3		22	9.4	29	13,066	-58.5		28	23.6	29	13,277	-59.5		28	25.6	26	13,037	-58.4		28	26.3	30	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
150 30	13	-57.3		22	9.9	29	13,674	-59.4		28	21.1	29	13,856	-62.5		28	23.9	26	13,629	-59.6		28	24.3	30	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
125 30	14	-54.4		23	9.5	29	14,509	-61.5		27	19.4	29	14,975	-64.8		28	22.9	26	14,766	-61.0		28	22.8	30	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
100 30	15	-52.3		23	9.3	29	16,187	-63.1		26	17.0	29	16,327	-67.0		27	17.2	26	16,187	-63.0		28	18.2	30	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
75 30	17	-55.1		23	10.0	29	17,561	-62.7		28	12.7	28	17,679	-66.1		28	15.2	26	17,522	-62.7		28	13.1	29	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
50 30	17	-57.7		23	10.7	29	18,387	-61.9		28	9.9	28	18,422	-64.9		28	13.6	26	18,347	-61.9		27	10.6	28	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
25 30	18	-55.9		23	11.2	29	19,375	-61.9		27	6.7	27	19,439	-67.1		29	9.1	25	19,303	-67.1		28	8.5	29	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
0 30	20	-55.5		24	12.5	29	20,473	-63.6		28	7.3	27	20,565	-61.8		29	6.8	26	20,435	-60.6		28	8.8	28	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
40 30	21	-55.4		24	14.0	26	21,873	-59.4		28	7.2	27	21,953	-60.1		31	5.7	26	21,829	-59.4		28	6.2	28	5	29.4	24.7	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9	30	9	27.1	23.1	09	2.9						
20 30	23	-55.1		24	15.4	23	23,679	-57.6		29	6.3	27	23,760	-57.6		30	5.2	25	23,639	-58.0		28	7.4	28	5	29.4	24.7	09	2.9	30	9	27.1																											

## Average monthly values

NOVEMBER 1980

SAINT LOUIS, MO 877 MB						ST. LOUIS, MO 1007 MB						ST. LOUIS, MO 1015 MB						SAINT LOUIS, MO 988 MB						SPOKANE, WA 916 MB						
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind					
					Direction tens of deg					Direction tens of deg					Direction tens of deg					Direction tens of deg					Direction tens of deg					
					Speed in m.p.s.					Speed in m.p.s.					Speed in m.p.s.					Speed in m.p.s.					Speed in m.p.s.					
1350	30	1,248	1.4	-3.0	16	1.4	29	124	11.1	-1.4	04	1.1	29	23.6	21.7	10	2.7	30	321	-1.8	-0.5	34	1.4	30	720	1.0	-1.17	4.1		
1300	29	1,256	1.2	-1.0	15	1.2	29	156	11.2	-1.05	04	1.2	29	136	21.7	19.1	10	2.7	30	321	-1.8	-0.5	34	1.4	30	720	1.0	-1.17	4.1	
1250	29	1,265	1.0	-1.0	15	1.0	29	156	15.8	-1.1	01	1.5	29	18	21.7	19.1	10	2.7	30	321	-1.8	-0.5	34	1.4	30	720	1.0	-1.17	4.1	
1200	29	1,274	1.0	-1.0	15	1.0	29	1,044	15.8	-1.1	02	1.4	29	1,053	18.6	14.4	10	2.7	30	321	-1.8	-0.5	34	1.4	30	720	1.0	-1.17	4.1	
1150	30	1,536	4.6	-3.7	19	1.9	29	1,526	13.2	-7.9	36	2.1	29	1,472	15.6	10.5	10	2.7	30	1,474	-3.8	-9.8	30	3.2	1,499	1.5	-5.6	22	6.9	
1100	30	1,239	3.7	-7.5	22	2.5	29	1,233	10.4	-10.4	35	3.3	29	2,055	13.7	4.7	10	2.7	30	1,989	-6.2	-16.3	29	9.4	1,985	-7.7	-10.2	24	8.1	
1050	30	1,250	3.7	-11.2	23	3.5	29	2,568	8.1	-13.7	34	3.1	29	2,559	11.7	-5.4	10	2.7	30	2,193	-19.7	-27.2	29	11.0	2,499	-3.1	-13.8	25	8.6	
1000	30	1,103	-1.1	-15.3	28	5.5	29	1,103	8.4	-15.7	34	3.1	29	3,173	9.8	-10.1	10	2.7	30	2,127	-10.3	-22.6	40	12.6	2,082	-6.1	-15.1	27	8.6	
0950	30	1,364	-5.3	-18.1	28	6.2	29	1,734	1.0	-18.7	32	5.6	29	3,785	6.4	-13.2	10	2.7	30	1,495	-13.1	-24.3	29	14.0	1,649	-9.3	-18.4	26	12.0	
0900	30	1,313	-9.1	-21.1	29	9.2	29	4,372	-3.8	-21.9	32	6.0	29	4,436	3.4	-16.7	09	5.3	30	4,101	-16.1	-26.9	29	15.6	4,233	-13.1	-21.1	27	13.8	
0850	30	1,991	-13.2	-24.4	30	11.0	29	4,254	-7.9	-25.5	31	7.7	29	5,137	-1.0	-20.4	10	5.3	30	4,752	-20.0	-29.7	29	17.7	4,891	-17.6	-25.6	27	15.6	
0800	30	1,911	-18.6	-28.1	29	13.4	29	4,788	-13.1	-30.4	31	7.2	29	5,891	-5.8	-24.2	11	5.3	30	4,452	-24.7	-34.2	29	19.4	5,596	-22.3	-30.2	27	16.6	
0750	30	1,941	-23.1	-31.4	29	14.8	29	4,582	-18.9	-33.5	31	10.1	29	6,708	-11.1	-28.7	10	5.3	30	4,711	-30.1	-39.4	29	21.1	6,365	-27.2	-36.3	27	18.5	
0700	30	1,733	-29.4	-39.5	29	16.6	29	7,444	-25.6	-39.1	31	11.6	29	7,602	-17.2	-34.5	10	5.3	30	7,039	-36.1	-45.1	29	23.9	7,203	-33.5	-41.7	27	21.4	
0650	30	8,275	-36.3	-43.3	29	16.9	29	4,455	-32.6	-44.1	31	13.8	29	8,562	-24.6	-40.7	09	2.4	30	7,557	-42.2	-48.2	29	26.6	8,130	-40.1	-41.3	27	25.8	
0600	29	9,306	-45.1		29	17.6	29	2,473	-40.8	-50.8	32	14.4	29	9,692	-33.1	-48.2	07	2.9	30	8,982	-48.5		29	30.8	9,163	-47.5		27	28.9	
0550	29	10,520	-53.1		29	20.6	29	1,687	-49.4		31	16.2	29	10,998	-38.1		04	5.7	30	10,167	-53.8		29	30.0	10,349	-54.5		27	31.4	
0500	29	11,119	-58.6		29	21.2	29	12,122	-57.1		29	19.4	29	12,448	-54.7		01	8.8	30	11,597	-58.2		28	28.6	11,763	-58.4		27	31.3	
0450	29	12,774	-60.8		29	21.5	29	12,965	-59.4		29	20.1	29	13,256	-61.2		01	7.4	30	12,958	-58.1		28	26.6	13,601	-59.2		28	29.2	
0400	29	13,732	-62.6		29	21.1	29	11,923	-62.6		29	18.4	29	14,197	-66.2		36	7.2	30	13,443	-54.2		28	24.6	15,370	-58.2		28	25.3	
0350	29	14,988	-63.1		29	17.5	29	16,139	-64.3		29	17.0	29	15,275	-74.2		35	6.8	30	14,508	-55.9		28	22.4	15,716	-58.9		28	22.7	
0300	29	16,223	-64.8		29	15.4	27	16,385	-69.3		28	14.4	29	16,562	-77.6		35	3.7	29	16,726	-57.1		28	18.6	19,115	-59.3		27	18.3	
0250	29	17,988	-64.2		29	11.4	27	17,717	-69.0		29	11.1	29	17,841	-73.9		03	2.5	28	17,738	-57.4		28	14.9	28,175	-59.9		27	13.6	
0200	29	18,429	-61.8		29	4.0	25	16,526	-66.8		29	7.8	29	18,614	-76.0		04	1.6	26	18,728	-57.7		27	12.1	27,184	-59.9		27	11.9	
0150	25	19,357	-62.7		29	8.4	25	19,462	-68.7		29	6.4	29	19,527	-81.2		04	1.6	26	19,510	-57.8		28	10.6	19,319	-59.0		28	10.0	
0100	25	20,434	-61.8		36	6.0	25	20,583	-62.1		31	5.0	29	20,638	-82.7		04	1.6	26	20,400	-56.4		28	9.0	20,462	-58.9		28	9.5	
0050	24	21,875	-60.1		30	5.4	23	21,974	-59.7		30	4.3	28	22,026	-58.7		09	0.0	25	21,809	-58.6		28	7.9	25,186	-58.7		28	7.3	
0000	24	23,581	-57.7		30	6.1	21	23,791	-55.7		29	5.1	28	23,834	-53.6		09	3.0	23	23,622	-58.3		28	7.7	25,361	-57.3		29	7.1	
2350	24	24,837	-59.0		29	4.8	21	24,955	-54.6		28	6.9	28	25,054	-51.0		10	5.7	22	24,767	-58.0		29	7.5	24,638	-57.0		30	7.1	
2300	24	26,146	-55.6		29	7.2	20	26,391	-52.1		27	13.7	28	26,497	-47.9		10	6.6	22	26,111	-57.4		29	8.1	26,254	-56.7		31	7.6	
2250	14	27,120	-54.6		29	9.2	15	27,263	-57.1		27	10.9	28	26,443	-43.6		10	6.6	20	26,998	-56.2		29	9.0	19	26,099	-56.7		31	9.0
1350	13	27,721	-51.8		29	5.1	23	27,953	-47.4		23	31	28,154	-40.6		13	4.8	14	30,615	-53.8										



# RAWINSONDE DATA

Average monthly values

NOVEMBER 1980

WET PULUW. HEAD, FL 1017 MB										INNEBUCCA, FL 874 MB										WINLOW, AZ 855 MB										YAKUTAT, AK 1000 MB										YAP, CAROLINE IS. 1008 MB									
Standard pressure surface mb	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind		No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Resultant Wind																				
					Direction tens of deg.	Speed m.p.a.					Direction tens of deg.	Speed m.p.a.					Direction tens of deg.	Speed m.p.a.					Direction tens of deg.	Speed m.p.a.					Direction tens of deg.	Speed m.p.a.																			
1000	30	7	19.6	16.8	04	1.7	30	1,312	-1.1	-7.9	27	4	30	1,487	-1.7	-8.4	19	7	30	12	2.8	.8	11	2.7	30	14	28.7	25.3	07	2.8																			
900	30	1,055	15.6	11.7	12	1.4	30	1,538	5.7	-4.0	21	1.1	29	1,540	2.1	-9.3	19	3	30	1,316	-3.5	-6.4	15	7.0	30	1,507	18.2	14.8	08	5.6																			
800	30	1,100	14.6	9.3	12	3.0	30	1,703	4.5	-7.4	24	3.3	30	2,033	6.6	-8.5	30	1.5	30	1,793	-6.4	-11.8	15	7.7	30	2,026	16.0	11.4	08	5.7																			
700	30	2,591	10.4	-2.8	23	5.1	30	2,557	7.0	-10.4	25	5.2	30	2,560	4.0	-10.2	31	2.4	30	2,794	-9.7	-16.8	16	7.6	30	2,574	15.5	7.1	09	6.1																			
600	30	3,153	7.8	-5.8	23	8.2	30	3,110	-1.4	-13.3	26	7.1	30	3,118	.7	-13.1	31	2.8	30	2,823	-13.2	-20.9	17	7.8	30	3,153	10.7	2.8	09	6.9																			
500	30	3,770	4.1	-9.1	24	7.2	30	3,688	-4.4	-18.2	27	9.2	30	3,713	-2.3	-17.2	31	4.2	30	3,384	-16.9	-25.3	17	7.8	30	3,767	7.0	-1.6	09	6.8																			
400	30	4,417	.6	-14.1	24	7.2	30	4,308	-7.7	-20.2	28	11.1	30	4,341	-8.0	-21.7	31	5.9	30	3,980	-20.9	-31.6	18	8.0	30	4,422	3.3	-6.3	09	6.9																			
300	30	5,110	-3.4	-17.1	25	7.2	29	5,003	-11.9	-22.4	28	12.7	30	5,017	-10.3	-25.7	31	7.5	30	4,617	-25.1	-36.3	18	8.5	30	5,123	-4	-11.6	09	7.0																			
200	30	5,855	-5.4	-20.7	25	9.9	29	5,702	-16.7	-26.4	29	14.2	30	5,744	-15.1	-30.8	30	7.8	30	5,302	-30.1	-39.1	18	8.2	30	5,879	-4.8	-17.2	09	7.4																			
100	30	6,587	-13.2	-26.7	25	11.7	28	6,436	-22.2	-31.4	29	15.2	29	6,533	-20.5	-35.4	30	8.8	30	6,044	-35.5	-43.1	19	9.3	30	6,701	-9.5	-22.0	09	6.9																			
0	30	7,384	-19.1	-31.1	25	14.7	28	7,363	-28.7	-38.2	29	17.5	28	7,387	-27.3	-40.7	29	10.5	30	6,853	-41.9	-48.6	19	10.4	30	7,602	-14.9	-27.8	09	6.4																			
100	30	8,286	-26.3	-36.5	25	17.4	28	8,309	-35.7	-42.4	29	20.8	28	8,336	-34.9	-45.6	29	12.2	30	7,748	-48.1		20	11.7	30	8,602	-21.7	-35.3	10	5.5																			
200	30	9,286	-34.4	-44.5	25	21.4	28	9,367	-47.7	-48.7	29	22.7	28	9,391	-42.9	-49.5	29	13.4	30	8,749	-53.5		22	12.6	30	9,716	-30.1	-42.8	10	5.3																			
300	30	10,286	-44.4	-52.4	25	25.4	27	10,507	-52.4		29	24.7	28	10,598	-50.9		29	14.7	30	9,913	-56.1		23	10.5	30	10,987	-40.3	-51.6	10	6.1																			
400	30	11,286	-54.3	-60.3	25	30.7	27	11,974	-59.4		29	28.7	28	12,031	-56.7		30	17.9	30	11,136	-54.4		24	10.0	30	12,469	-52.6		09	6.9																			
500	30	12,286	-64.2	-68.2	25	32.0	27	12,808	-67.4		29	26.6	28	12,873	-59.1		29	16.4	30	12,194	-53.5		24	11.0	30	13,319	-59.1		09	6.7																			
600	30	13,286	-74.1	-78.1	25	34.3	27	13,932	-77.4		29	24.7	29	13,832	-62.3		29	17.4	30	11,185	-53.5		24	11.1	30	14,269	-66.8		08	5.9																			
700	30	14,286	-84.0	-88.0	25	36.6	27	14,891	-83.7		28	21.2	28	14,952	-64.7		29	16.5	28	14,356	-53.5		24	11.4	30	15,352	-74.1		08	7.0																			
800	30	15,286	-93.9	-97.9	25	38.9	27	16,258	-94.6		28	17.9	28	16,303	-67.9		28	14.0	28	15,791	-54.2		24	9.4	30	16,627	-81.1		08	9.8																			
900	30	16,286	-103.8	-107.8	25	41.2	27	17,255	-93.7		28	12.3	29	17,444	-68.0		29	17.7	25	17,240	-54.5		24	10.6	30	17,885	-78.3		09	7.6																			
1000	30	17,286	-113.7	-117.7	25	43.5	27	18,447	-102.7		29	9.4	27	18,451	-66.4		29	8.3	25	18,096	-54.6		25	10.8	30	18,661	-71.8		07	2.9																			
1100	30	18,286	-123.6	-127.6	25	45.8	27	19,396	-115.7		29	6.0	26	19,390	-64.4		29	6.9	25	19,083	-54.6		25	10.3	30	19,583	-66.4		30	2.0																			
1200	30	19,286	-133.5	-137.5	25	48.1	27	20,541	-100.4		29	3.0	24	20,416	-62.0		29	5.5	24	20,252	-55.4		26	9.0	30	20,698	-62.7		29	3.1																			
1300	30	20,286	-143.4	-147.4	25	50.4	27	21,935	-109.4		29	0.0	23	21,903	-59.9		29	5.6	24	21,675	-55.8		26	8.8	28	22,089	-58.1		28	2.5																			
1400	30	21,286	-153.3	-157.3	25	52.7	27	23,744	-118.4		31	4.5	24	23,717	-56.3		28	7.3	23	23,530	-54.7		27	8.0	27	23,918	-54.4		20	.6																			
1500	30	22,286	-163.2	-167.2	25	55.0	27	24,900	-127.3		31	5.2	23	24,876	-55.2		28	9.0	22	24,692	-55.2		27	9.0	26	25,090	-52.0		15	1.6																			
1600	30	23,286	-173.1	-177.1	25	57.3	27	26,322	-136.3		32	5.5	23	26,307	-53.7		28	12.2	19	26,160	-55.0		28	8.9	26	26,552	-47.8		09	5.6																			
1700	30	24,286	-183.0	-187.0	25	59.6	27	28,164	-145.4		31	6.1	22	28,169	-51.9		27	16.6	16	27,977	-55.9		29	10.1	25	28,467	-44.3		10	12.2																			
1800	30	25,286	-192.9	-196.9	25	61.9	27	30,736	-154.2		12	12	30,793	-49.8		28	26.8	11	30,651	-54.7		29	10.4	19	31,212	-38.7		09	20.4																				
1900	30	26,286	-202.8	-206.8	25	64.2	27																																										
2000	30	27,286	-212.7	-216.7	25	66.5	27																																										
2100	30	28,286	-222.6	-226.6	25	68.8	27																																										
2200	30	29,286	-232.5	-236.5	25	71.1	27																																										
2300	30	30,286	-242.4	-246.4	25	73.4	27																																										
2400	30	31,286	-252.3	-256.3	25	75.7	27																																										
2500	30	32,286	-262.2	-266.2	25	78.0	27																																										
2600	30	33,286	-272.1	-276.1	25	80.3	27																																										
2700	30	34,286	-282.0	-286.0	25	82.6	27																																										
2800	30	35,286	-291.9	-295.9	25	84.9	27																																										
2900	30	36,286	-301.8	-305.8	25	87.2	27																																										
3000	30	37,286	-311.7	-315.7	25	89.5	27																																										
3100	30	38,286	-321.6	-325.6	25	91.8	27																																										
3200	30	39,286	-331.5	-335.5	25	94.1	27																																										
3300	30	40,286	-341.4	-345.4	25	96.																																											



# SOLAR RADIATION INTENSITIES

Tabulated in langley's per minute on a surface normal to the direction of the sun.

Palmer, Alaska										Tucson, Arizona									
Sun's zenith distance										Sun's zenith distance									
A.M.					P.M.					A.M.					P.M.				
78°	75°	70°	60°		60°	70°	75°	78°		78°	75°	70°	60°		60°	70°	75°	78°	
MAUNA LOA OBSERVATORY, HI										TUCSON, ARIZONA									
Air mass										Air mass									
1.0	2.67	2.01	1.34	*	1.34	2.01	2.67	3.34		4.64	3.71	2.78	1.86	*	1.86	2.78	3.71	4.64	
1-----	1.15	1.24	1.34	1.47	1.57	-----	-----	-----	1-----	-----	-----	1.11	1.24	-----	1.11	1.04	-----	-----	-----
2-----	1.16	1.25	1.35	1.48	1.58	-----	1.35	1.26	2-----	.93	1.02	1.14	1.27	1.35	1.27	1.07	-----	-----	-----
3-----	1.12	1.21	1.32	1.44	1.56	1.43	1.32	1.22	3-----	.86	.97	1.08	1.24	1.33	1.24	-----	-----	-----	-----
4-----	1.06	1.16	1.26	1.39	1.52	1.41	1.29	1.20	4-----	.88	.96	1.08	1.20	1.35	1.24	-----	-----	-----	-----
5-----	1.14	1.21	1.32	1.43	1.54	1.42	1.30	1.19	5-----	.90	.99	1.10	1.24	1.33	1.23	-----	-----	-----	-----
6-----	1.18	1.26	1.35	1.46	1.56	1.44	1.30	1.22	6-----	.80	.90	1.04	1.20	1.30	1.20	-----	.95	-----	.85
7-----	1.18	1.26	1.35	1.46	1.56	1.47	1.34	1.24	7-----	.91	.91	1.02	1.18	1.32	1.23	-----	-----	-----	.81
8-----	1.22	1.35	1.38	1.50	1.59	1.49	1.35	1.28	8-----	.87	.98	1.10	1.24	1.33	1.23	1.11	1.00	-----	.90
9-----	1.18	1.26	1.36	1.48	-----	-----	-----	-----	9-----	.95	1.04	1.15	1.29	1.36	1.27	1.14	.97	-----	.87
10-----	1.23	1.31	1.39	1.51	1.61	1.49	1.38	1.30	10-----	.79	.86	-----	1.18	1.29	1.16	-----	-----	-----	.83
11-----	1.27	1.34	1.42	1.53	1.61	-----	1.34	1.23	11-----	-----	-----	-----	-----	-----	1.16	-----	-----	-----	-----
12-----	1.25	1.36	1.41	1.52	1.60	-----	-----	-----	12-----	-----	-----	-----	-----	-----	-----	.98	-----	-----	-----
13-----	-----	-----	-----	1.58	1.44	1.28	1.17	1.07	13-----	.72	.86	1.00	1.18	1.26	1.16	-----	-----	-----	-----
14-----	1.19	1.28	1.37	1.51	1.61	1.49	1.38	1.28	14-----	-----	-----	-----	1.17	1.24	-----	-----	-----	-----	-----
15-----	1.28	1.35	1.44	1.55	1.64	1.53	1.40	1.31	15-----	.84	.98	1.17	1.26	-----	-----	-----	-----	-----	-----
16-----	-----	1.33	1.41	1.53	1.61	1.50	1.37	1.27	16-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
17-----	1.22	1.29	1.38	1.49	1.60	1.49	1.37	1.28	17-----	.90	1.02	1.13	1.30	1.35	1.27	1.12	-----	-----	-----
18-----	1.18	1.27	1.37	1.51	1.62	1.49	1.40	1.36	18-----	-----	-----	1.14	1.31	1.32	1.28	1.12	-----	-----	-----
19-----	1.26	1.35	1.43	1.54	1.61	1.53	1.42	1.33	19-----	.92	1.02	1.14	1.29	1.33	1.25	1.09	-----	-----	-----
20-----	1.24	1.32	1.41	1.52	1.57	1.50	1.38	1.28	20-----	-----	.97	1.13	1.21	-----	.97	-----	-----	-----	-----
21-----	1.21	1.29	1.39	1.50	1.55	-----	-----	-----	21-----	.83	.96	1.07	1.21	1.27	1.25	1.07	.92	-----	.82
22-----	1.20	1.28	1.36	1.47	-----	-----	-----	-----	22-----	.83	.93	1.02	1.18	-----	-----	.76	-----	-----	-----
23-----	1.18	1.27	1.36	1.48	-----	-----	-----	-----	23-----	.95	.95	1.09	1.22	1.29	1.22	1.08	.96	-----	.86
24-----	1.19	1.27	1.37	1.49	1.56	-----	-----	-----	24-----	.92	1.02	1.15	1.31	1.34	1.28	1.16	1.01	-----	.90
25-----	1.20	1.29	1.38	1.50	1.56	-----	-----	-----	25-----	.94	1.02	1.13	1.29	1.35	1.29	1.11	-----	-----	.93
26-----	1.20	1.29	1.39	1.50	1.53	-----	-----	-----	26-----	.94	1.04	1.16	1.29	1.35	-----	-----	-----	-----	.88
Average	1.20	1.28	1.37	1.49	1.58	1.47	1.35	1.19	Average	.87	.92	1.09	1.24	1.31	1.23	1.08	.94	-----	.85

## NET RADIATION

Net radiation in langley's per day (8 a.m. to 8 a.m.) at Palmer, Alaska.

Date . . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langley's . .	- 3	18	-17	-34	-22	-11	-13	-18	-37	- 2	-28	-56	-----	-100	-63	100	-27	-104	-55	-104	-113	-104	-67	- 7	-----	-63	- 8	-31	-31	-12	-----	-----

# REFERENCE NOTES

## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES:

Dates in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

+ And also on an earlier date or dates.

D Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snowfall.

CLIMATOLOGICAL DATA - METRIC UNITS: Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

B Number of days maximum 21.1°C. or above for Alaskan Stations.

Y Peak Gust.

+ And also on an earlier date or dates.

U Indicates Urban site.

R Indicates Rural site.

Ø Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

1 foot = 0.3048 meters

°F. = 9 x °C + 32

1 inch = 25.4 millimeters

1 mile per hour = 0.447 meters per second

HEATING DEGREE DAYS: Data from airport unless otherwise specified.

U Indicates Urban site.

R Indicates Rural site.

COOLING DEGREE DAYS: Data from airport unless otherwise specified.

U Indicates Urban site.

R Indicates Rural site.

## STORM SUMMARY:

o Includes crop damage.

C Crop damage.

\* No occurrence of storms or unusual weather phenomena reported.

@ Includes heavy sleet storm.

f Freezing drizzle and freezing rain, commonly known as glaze.

Ø For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.

# No Storm Data Report received for this State.

· Report Incomplete.

+ Storm damages are placed in categories varying from 1 to 9 as follows:

1 Less than \$50

2 \$50 to \$500

3 \$500 to \$5,000

4 \$5,000 to \$50,000

5 \$50,000 to \$500,000

6 \$500,000 to \$5 Million

7 \$5 Million to \$50 Million

8 \$50 Million to \$500 Million

9 \$500 Million to \$5 Billion

## RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, G.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Dew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Dew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Dew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygrometers. These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

\* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.

+ Observations for these stations are scheduled at 0000 G.C.T.

\* Dew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Dew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Dew Point temperatures replaced Relative Humidity January 1967.

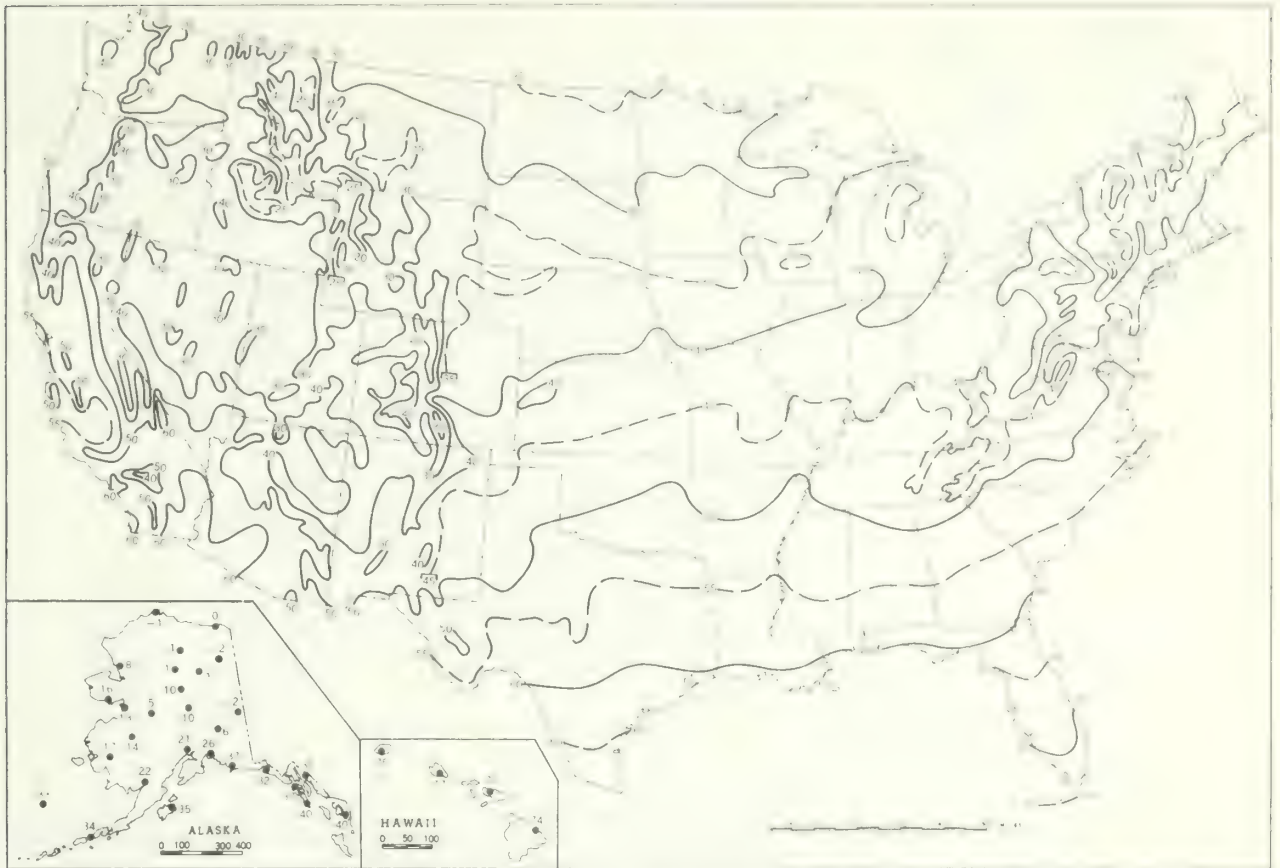
SOLAR RADIATION INTENSITIES: Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

* Clouds Present	DM Moderate Dust	HM Moderate Haze	KS Slight Smoke
* Values corresponding to true solar noon	DS Slight Dust	HS Slight Haze	M Moderate Haze-indeterminable
BD Blowing Dust	F Fog	I Intense Haze-indeterminable	N Sand
BN Blowing Sand	CF Ground Fog	K Smoke	S Slight Haze-indeterminable
D Dust	H Haze	KI Intense Smoke	
DI Intense Dust	HI Intense Haze	KM Moderate Smoke	

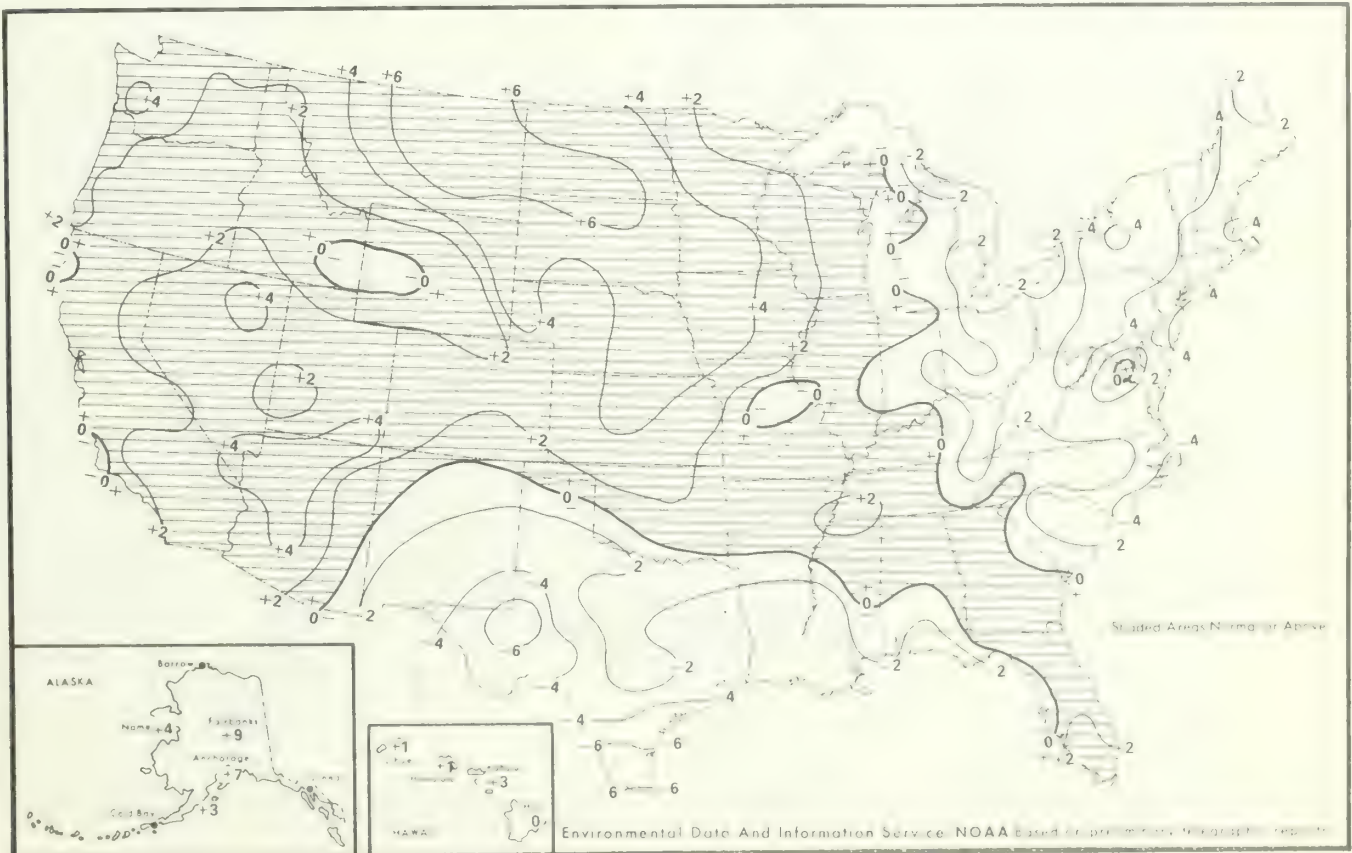
NET RADIATION: The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of sod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.

Chart 1. A. Normal Daily Average Temperature (°F. 1941-70), November.



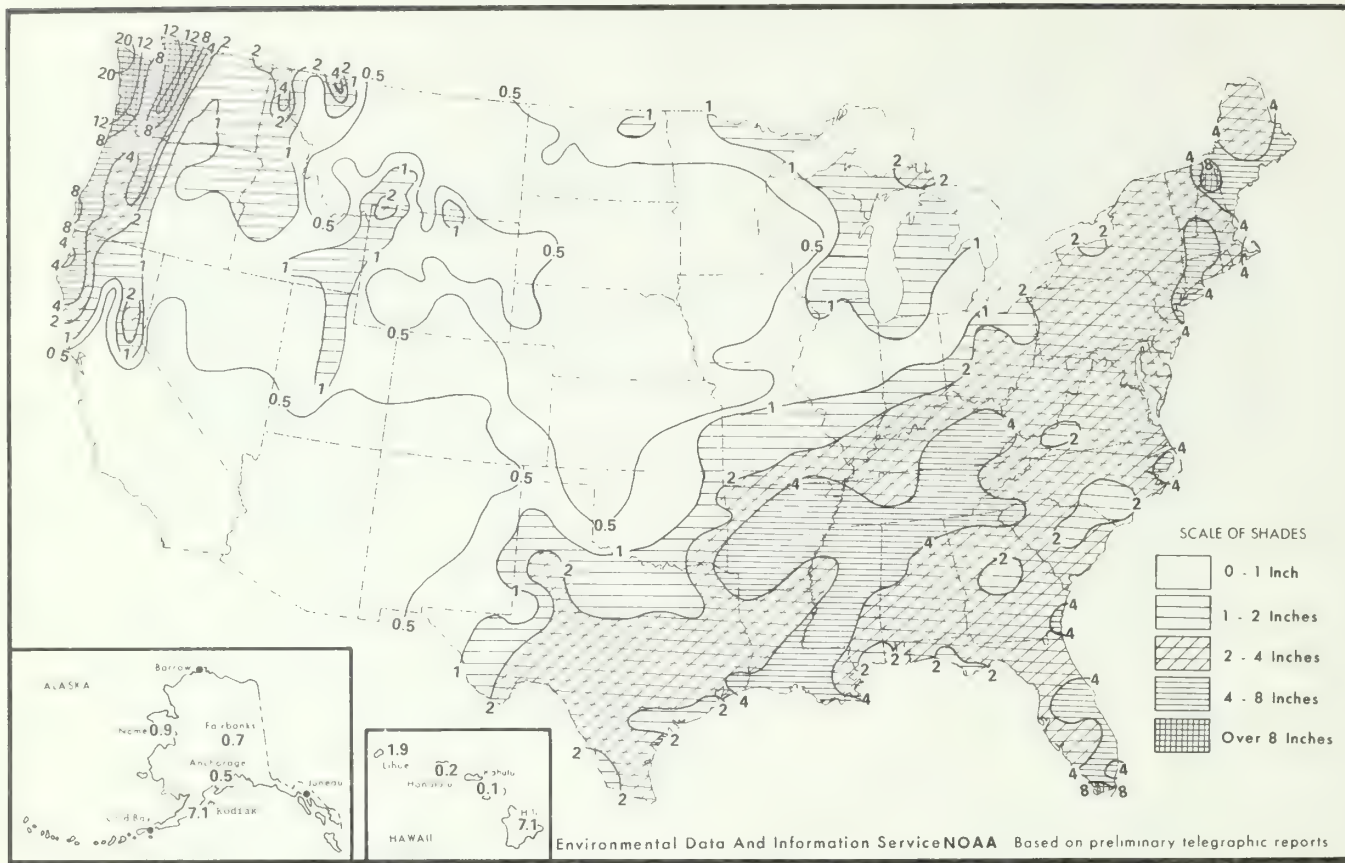
B. Temperature Departure from 30 - Year Mean (°F 1941-70), November 1980



Environmental Data and Information Service NOAA based on preliminary meteorological reports



Chart II A Total Precipitation (Inches), November 1980



B. Percentage of Normal Precipitation, November 1980

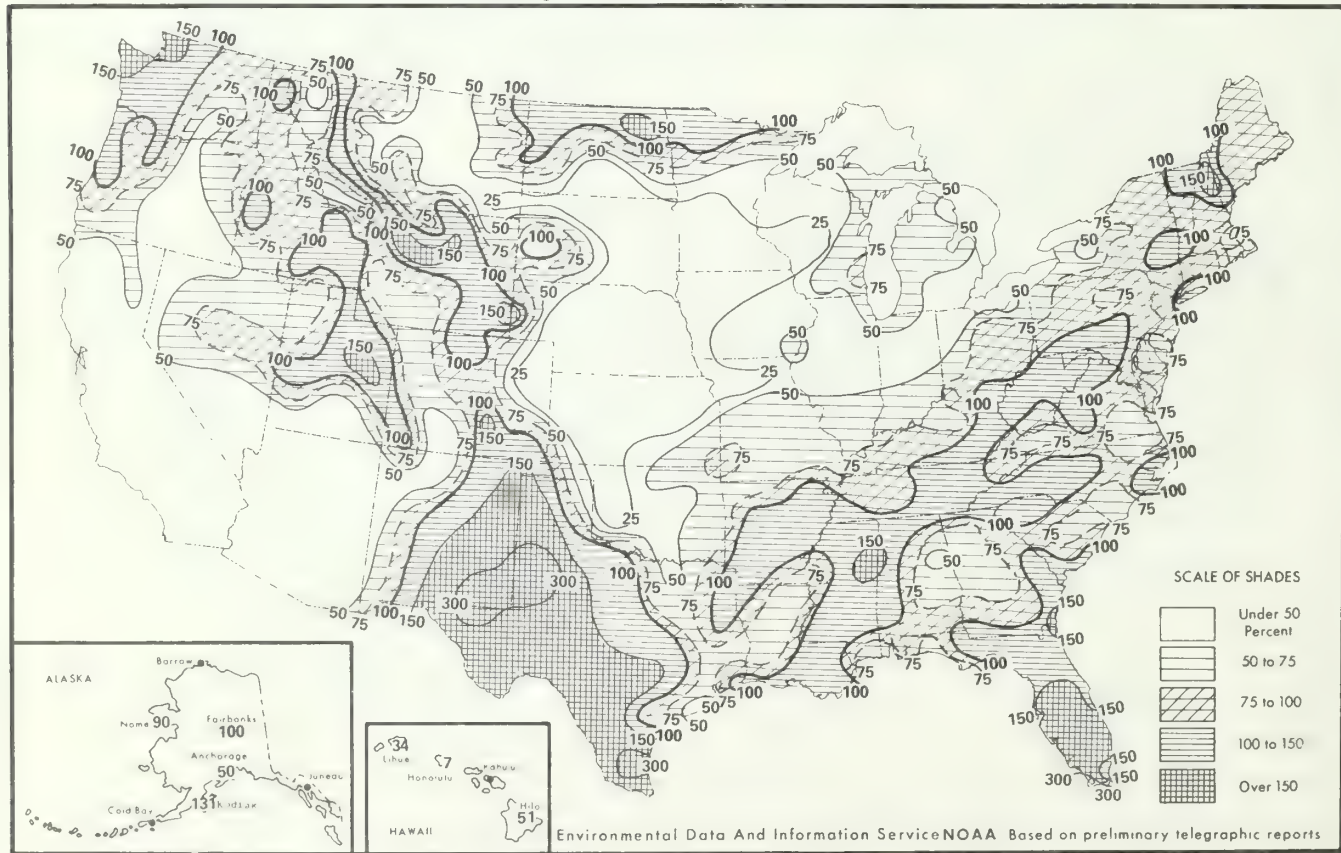
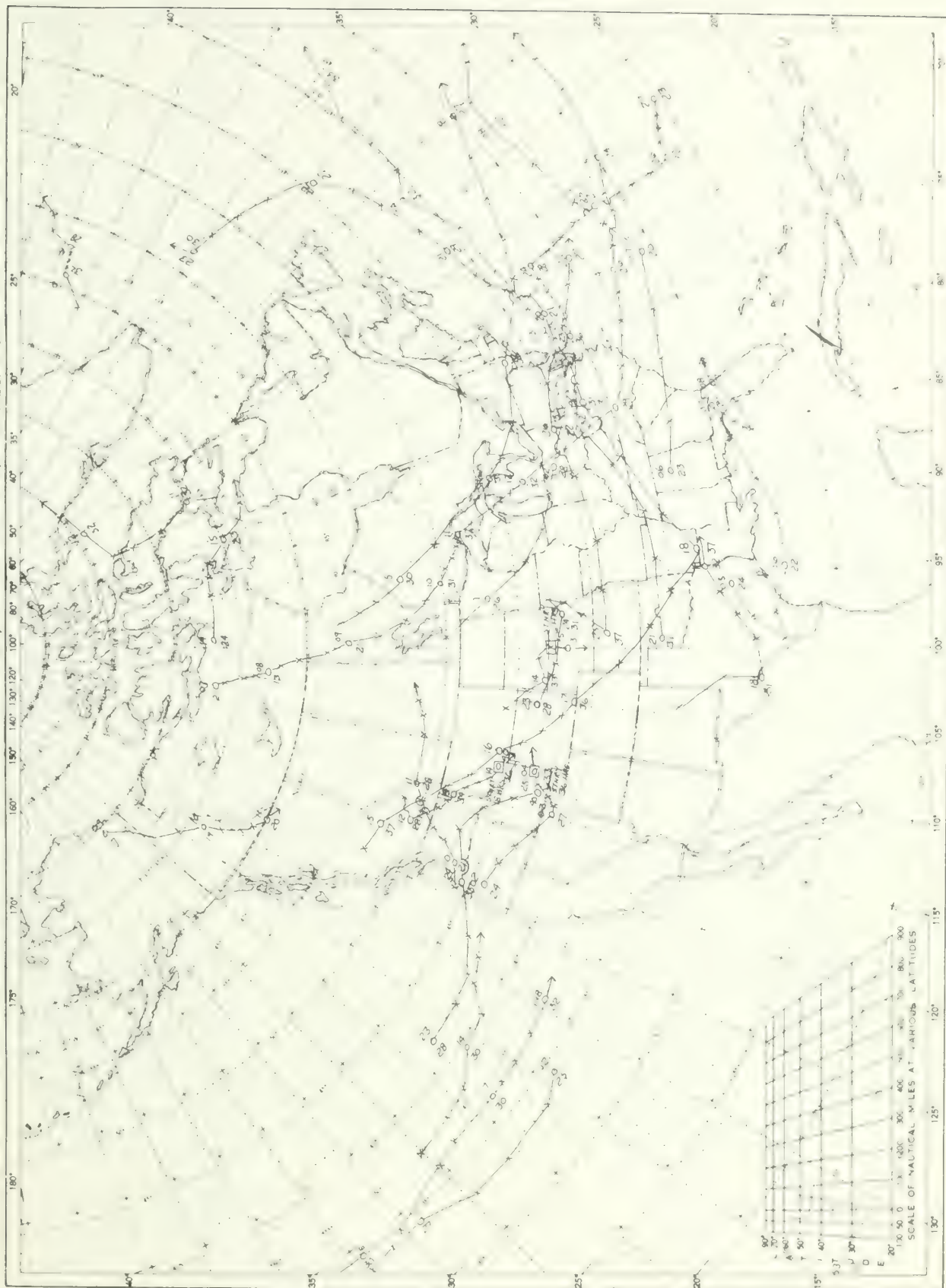


Chart III. Tracks of Centers of Anticyclones at Sea Level, November 1980



Circle indicates position of center at 500 m E.S.T. Figure above circle indicates date, figure below pressure to nearest millibar  
 X's indicate intervening 6 hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track  
 indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included









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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



THIS PUBLICATION HAS BEEN FUNDED, PRIMARILY, THROUGH DIRECT APPROPRIATIONS FROM CONGRESS. BUDGET REDUCTIONS FOR FISCAL YEAR 1982 NECESSITATE ITS TERMINATION WITH THE 1980 ANNUAL ISSUE.

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*Daniel B. Mitchell*

DIRECTOR  
NATIONAL CLIMATIC CENTER



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NOTE: Late reports and corrections will be carried in the June and December issues of this publication. An explanatory page "Description of Charts" will be carried in the January and July issues.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

DECEMBER 1980

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lyle Denny, Climatologist  
Environmental Data and Information Service, NOAA

**HIGHLIGHTS:** Storm systems moving through the Pacific Northwest brought significant rain from northern California to the Rockies and snow through the northern Rockies and Plains. Subsequent warming throughout the West melted snowpack in all but the higher elevations and caused flooding in western Washington and Oregon. An area from central Texas to the western Great Lakes accumulated above-normal precipitation, but the eastern third of the Nation was relatively dry. Temperatures averaged colder than normal in the Northeast and the Southeast but ranged warmer than normal in the West and central areas.

**FIRST WEEK-** A cold airmass moved southeastward early in the week and rapidly covered the entire United States east of the Rockies. At the same time, a low pressure system off the northwest Pacific coast brought rain, with snow at higher elevations, to nearly all of the western United States. Rain fell heavily, at times, along the west coast and was accompanied by high winds as the storm system moved southward along the coast. After midweek, the cold air moved into the Atlantic, and warmer air edged northeastward through Texas. The moisture-laden air spread rain from Texas to the Great Lakes. The precipitation fell as freezing rain in the Lakes area. Also, after midweek, a surge of arctic air pushed into the northern Plains and spread over the northern Rockies and the Pacific Northwest.

**SECOND WEEK-** The warm, moist air from the Gulf of Mexico continued to flow northward through Texas. The warmer air met the cold air, which had advanced to a line from the western Great Lakes to central Texas at the beginning of the week, and set off some heavy showers and even some thunderstorms in Oklahoma and Kansas. Much of the winter wheat in the central Plains received some welcome moisture. Freezing rain occasionally fell behind the cold

front from Missouri northward. Precipitation covered most of eastern United States as the cold air advanced. Successive surges of cold air moving across the Great Lakes triggered snow nearly every day. Meanwhile, to the west of the cold air, high winds blowing down the eastern slopes of the Rockies brought unseasonably high temperatures to the High Plains.

**THIRD WEEK-** Another surge of cold air moved into the eastern portion of the northern Plains. A complex storm system developed as the cold air moved into the Ohio Valley. One low pressure center moved northeastward spreading snow from the Great Lakes to the east coast and north of Pennsylvania. Another center moved southeastward and spread rain from Virginia through Florida. High pressure centered on the Plateau continued to cause downslope flow along the eastern Rockies. This condition kept the High Plains, and the West in general, warmer than normal. Late in the week, a Pacific weather system spread rain from northern California through the Pacific Northwest.

**FOURTH WEEK-** The Pacific storm moved through the Northwest and formed a low pressure center in Wyoming. This, in turn, caused a new polar outbreak over all of the northern Plains, bringing sub-zero temperatures to the northern slopes of the Rockies. The cold air moved rapidly southeastward spreading snow across the northern Plains and snow or rain through the central Plains and the Mississippi Valley eastward. Very cold air enveloped the northeastern United States, and below-normal temperatures spread throughout the East.

The last three days of the month saw a low pressure center form off the Carolina coast and spread rain from Maryland southward and snow to the north.

## OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

DECEMBER 1980

STATE	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest °F	Date	Station	Lowest °F	Date	Station	Greatest In.	Station	Least In.
Alabama	5 Stations	104	1904	Haleyville 2 N	14	24	Dadeville	2.26	Greensboro	.17
Alaska	Petersburg	100	1904	Tok	-80	27	Beaver Falls	18.11	Clear	.00
Arizona	Bullhead City	100	1904	Hawley Lake	-4	9	Pinetop	2.09	12 Stations	.01
Arkansas	Tustin	100	1904	Lead Hill	-1	20	Langley	3.95	Salem	.51
California	Tustin	100	1904	Bodie	-10	27	Shasta Dam	15.0	15 Stations	.00
Colorado	Pueblo WSO AP	100	1904	Taylor Park	-28	10	Redstone 1 W	1.96	13 Stations	.00
Connecticut	Bulls Bridge Dam	100	1904	2 Stations	20	20	Groton	1.57	Round Pond	.47
Delaware	Wilmington	100	1904	Wilmington Port	0	10	Bridgeville 1 NW	.86	Middletown 1 WSW	.56
Florida	2 Stations	100	1904	2 Stations	20	11	Melbourne	3.79	Deland 1 SSE	.12
Georgia	2 Stations	100	1904	2 Stations	16	22	100	2.61	Cartersville	.17
Idaho	2 Stations	100	1904	2 Stations	12	11	Kahona Intake 374	16.19	Mauna Kea Obs 111.2	1
Illinois	Three Creek	100	1904	Hill City	-18	28	2 Stations	12.26	Leadore 2	.18
Indiana	2 Stations	100	1904	2 Stations	-1	27	Monmouth	3.82	Hillsboro	.61
Indiana	2 Stations	100	1904	2 Stations	-18	27	LaGrange Sewage Plant	4.02	Martinsville 2 SW	.64
Indiana	Keokuk Lock	100	1904	Hawarden	-20	10	Donnellson	4.03	3 Stations	.13
Iowa	2 Stations	100	1904	2 Stations	-7	20	Holton	5.35	4 Stations	.00
Kansas	Murray	100	1904	2 Stations	-7	20	Mayfield Radio WNGO	2.71	Seabee	.72
Louisiana	New Orleans WSO AP	100	1904	2 Stations	10	24	Melville	3.70	Columbia Locks	.54
Maine	2 Stations	100	1904	2 Stations	-16	21	Nachias	3.54	Sanford 2 NW	.77
Maine	2 Stations	100	1904	2 Stations	-15	20	Holbrook 2 NW	2.06	Westminster Police Bk	.33
Maryland	2 Stations	100	1904	2 Stations	-15	10	Chatham WSO	5.25	Lawrence	.46
Massachusetts	Chester 2	100	1904	Stambaugh 1 S	-16	10	Munising	5.05	St James Beaver Island	.70
Massachusetts	Saint Johns	100	1904	2 Stations	-1	27	Grand Marais	1.87	3 Stations	.7
Massachusetts	Worthington 2 NNE	100	1904	2 Stations	11	28	Liberty 1 W	4.17	Enid Dam	.24
Massachusetts	2 Stations	100	1904	2 Stations	1	27	Kansas City WSO AP	5.42	Rosebud	.18
Missouri	Dora	100	1904	2 Stations	-10	24	Troy 18 N	9.71	3 Stations	1
Montana	2 Stations	100	1904	2 Stations	-10	24	Falls City	1.47	2 Stations	.00
Nebraska	Dalton	100	1904	Mountain City R S	-16	8	Mount Rose Bowl	1.40	13 Stations	.00
New Hampshire	2 Stations	100	1904	2 Stations	-15	20	Mount Washington	4.11	Uppine	.72
New Jersey	4 Stations	100	1904	2 Stations	11	20	Toms River	2.50	Bound Brook 2 W	.42
New Mexico	2 Stations	100	1904	Eagle Nest	-10	10	Zuni 4 NE	1.03	11 Stations	.00
New York	4 Stations	100	1904	Old Forge	-10	20	Hooker 4 N	6.67	Suffern Water Works	.43
North Carolina	Concord	100	1904	Grandfather Mountain	-1	20	Morehead City WNW	10.52	Eden	.13
North Dakota	Watford City 14 S	100	1904	2 Stations	-15	20	Alexander 18 SW	.87	4 Stations	1
Ohio	Ironton	100	1904	2 Stations	-14	25	Montpelier	2.66	Roseville	.83
Oklahoma	3 Stations	100	1904	Ponca City FAA AP	1	20	Broken Bow Dam	3.15	Eva 4 E	.11
Oregon	Port Orford 2	100	1904	2 Stations	-10	20	Valsetz	32.00	Alkali Lake	.23
Pennsylvania	2 Stations	100	1904	Clermont 4 NW	-20	20	Warren	1.40	Marcus Hook	.27
Puerto Rico	Lajas Substation	100	1904	2 Stations	48	2	Pico Del Este	12.90	Hacienda Constanza	.05
Rhode Island	Providence WSO AP	100	1904	North Foster 1 E	-17	20	Block Island WSO AP	2.29	Woonsocket	.88
South Carolina	Spartanburg 3 E	100	1904	Caesars Head	1	20	Marion	1.39	Cleveland 4 S	.10
South Dakota	2 Stations	100	1904	Camp Crook	-10	20	Spearfish	1.88	Glad Valley 2 W	1
South Dakota	Huntingdon Water Plant	100	1904	2 Stations	-10	20	Monterey	2.99	Savannah	.78
Tennessee	Rio Grande City 3 W	100	1904	2 Stations	-10	20	Corsicana	3.60	7 Stations	.00
Texas	La Verkin	100	1904	2 Stations	-18	20	Alta	3.73	8 Stations	.00
Vermont	2 Stations	100	1904	Mount Mansfield	-10	20	Mount Mansfield	5.97	Cornwall	1.11
Virginia	Stony Creek	100	1904	Monterey	-10	20	Wallaceton Lk Drummond	3.03	Dale Enterprise	.17
Virgin Islands	2 Stations	114	1904	Alex Hamilton Fld FAA	8	20	Caneel Bay Plantation	5.75	Red Hook Bay	2.34
Washington	Walla Walla WSO CI	100	1904	2 Stations	17	7	Cougar 6 E	27.13	Ephrata FAA AP	1.35
West Virginia	2 Stations	100	1904	Sinks of Gandy	17	20	Pickens 1	3.18	Wardensville R M Farm	.05
Wisconsin	Beloit	100	1904	2 Stations	-14	20	Burlington	3.54	Lock	.16
Wisconsin	Parkman 5 WNW	100	1904	2 Stations	-15	20	Snake River	D 3.73	3 Stations	.20



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## DECEMBER 1980

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CLIMATOLOGICAL DATA  
METRIC UNITS

DECEMBER 1980

State and Station	Pressure		Temperature										Precipitation					Wind				No. of days (sunrise to sunset)		Possible sunshine (sunrise to sunset)	%																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	Elevation (ground)	Station Ø	Sea level	Average					Departure from normal					No. of days					Direction	Speed (1.6 kilometers)	Fastest mile (1.6 kilometers)	Date	Clear, 0-3			Partly cloudy, 4-7	Cloudy, 8-10	Sky cover, tenths																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
				Average maximum	Average minimum	Average	Highest	Lowest	Date	Max 32.2 °C or above	Min. 0 °C or lower	No. of days	Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	25 mm. or more											With thunderstorms	Total	Maximum depth on ground	Snow, ice pellets																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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Meridian	88	1011.9	1023.2	16.6	0.4	8.6	-0.3	25.0	8*	-5.6	2.8	0	21	1.1	66	28	-11.4	18	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0</

DECEMBER 1980



## CLIMATOLOGICAL DATA

METRIC UNITS

DECEMBER 1980

State and Station	Pressure		Temperature					Precipitation					Wind			No. of days (sunrise to sunset)		Possible sunshine (sunrise to sunset)														
	Station Elevation (ground)	Sea level	Average		Departure from normal	Highest	Lowest	Date	No. of days		Average dew point	Average relative humidity	Snow, ice pellets		Resultant direction	Speed	Direction		Date													
			Maximum	Minimum					Max 32.2 °C or above	Min. 0 °C or lower			Total	With thunderstorms						Greatest in 24 hours	25 mm. or more	Maximum depth on ground	Resultant speed	Fastest mile (1.6 kilometers)								
RHODE ISLAND PROVIDENCE	16	1015.9	1018.4	4.2	-8.1	-1.9	16.7	1	-23.3	25	0	27	-9.4	59	40	-65	11	15	0	91	51	2.9	31	12.5	12	4	8	11	12	5.7	62	
	SOUTH CAROLINA CHARLESTON	12	1019.3	1021.4	15.1	2.1	8.6	25.6	9	-4.4	26	0	12	2.8	71	32	-48	11	7	0	97	102	1.6	34	12.5	35	25	13	4	14	5.5	53
		COLUMBIA	65	1013.9	1022.0	14.3	-0.2	7.1	23.9	8	-3.3	26	0	19	0.0	67	91	-52	14	7	0	8	Y	34	9.8	126	13	5	13	5.2	58	
		GRANVILLE-SPRINGBROOK	292	986.5	1021.8	12.6	0.1	6.3	22.2	7	-8.9	26	0	16	-2.8	57	16	-88	7	7	0	Y	0	0.7	35	11.6	N 24	17	3	11	4.5	65
SOUTH DAKOTA ABERDEEN	395	973.9	1022.9	-1.6	-11.7	-6.7	11.1	30	-26.1	24	0	31	-9.4	74	4	-9	2	3	0	58	25	11.6	33	18	4	5	22	7.8	42			
	MURON	390	974.3	1022.9	-0.3	-10.8	-5.6	11.7	30	-23.3	24	0	31	-9.4	74	3	-10	3	0	76	51	0.5	1	13.9	N 9	4	6	21	7.8	37		
	RAPID CITY	964	907.6	1022.2	5.2	-7.1	-0.9	19.4	17	-22.8	1	0	25	-6.7	68	17	7	10	6	155	127	2.0	35	19.2	NW 9	5	7	19	7.5	32		
	SIOUX FALLS	432	969.9	1023.7	-1.3	-10.7	-6.0	10.6	17	-24.4	24	0	29	-10.0	73	7	-11	4	5	0	117	102	0.7	34	13.0	17	25	6	20	7.2	7.2	
TENNESSEE BRISTOL	459	967.2	1023.1	8.4	-3.7	2.4	20.0	8	-12.2	26	0	27	-3.3	72	35	-54	13	6	0	Y	Y	0.7	33	9.8	29	2	10	6	15	6.0	73	
	CHATTANOOGA	203	997.6	1023.0	11.8	-1.6	5.1	22.8	8	-8.3	25	0	23	-2.8	63	23	-110	15	2	0	0	0	1.1	34	10.3	11	6	13	5.5	73		
	KNOXVILLE	299	986.5	1022.5	10.3	-1.3	4.5	20.0	8	-10.0	25	0	21	-1.7	68	45	-68	30	5	0	Y	0	0.5	33	10.3	22	9	11	6	14	5.8	51
	MEMPHIS	179	1013.5	1024.0	13.2	2.2	7.7	1.8	23.3	7	-7.2	21	0	13	0.0	61	47	-72	44	4	0	Y	0	0.2	32	10.3	3	19	8	10	13	6.0
NASHVILLE	180	1001.4	1023.5	11.2	-1.2	5.0	22.2	8	-10.6	20	0	18	-2.2	62	36	-77	25	5	0	Y	Y	0	0.8	25	11.7	31	2	11	8	12	5.7	61
	OAK RIDGE P	276	996	1023.5	9.6	-2.7	3.5	20.6	8	-9.4	25	0	26	-2.2	62	51	-85	34	5	0	Y	Y	0	0.4	8.5	11	15	4	12	4.7	61	
	TEXAS ABILENE	544	958.0	1022.1	15.7	3.5	9.6	25.6	18	-8.1	35	0	10	2.2	65	43	17	43	2	1	0	0	1.2	20	17	7	12	6	13	5.5	57	
		AMARILLO	1088	985.0	1020.1	17.6	2.1	1.8	25.0	17	-9.7	30	0	6	-3.3	71	31	-10	9	1	Y	Y	0.5	26	34	23	9	11	11	5.5	68	
AUSTIN		172	1000.0	1022.5	17.6	2.1	1.8	25.0	17	-9.7	30	0	6	-3.3	71	31	-10	9	1	Y	Y	0.5	26	34	23	9	11	11	5.5	68		
BROWNSVILLE		102	1020.7	1022.4	21.8	11.5	12.1	27.6	18	-3.3	35	0	10	3.3	68	36	-10	34	5	1	0	0	0.6	35	13.4	10	3	18	6.2	51		
CORPUS CHRISTI	15	1020.7	1022.4	16.8	9.1	16.3	27.2	16	-0.2	25	0	10	3.3	68	36	-10	34	5	1	0	0	0.6	35	13.4	10	3	18	6.2	51			
	DALLAS - FORT WORTH	168	1001.0	1022.9	15.6	3.8	11.9	25.0	17	-1.7	25	0	10	3.3	68	36	-10	34	5	1	0	0	0.6	35	13.4	10	3	18	6.2	51		
	DEL RIO	313	1001.0	1022.9	17.5	6.4	11.9	25.0	17	-1.7	25	0	10	3.3	68	36	-10	34	5	1	0	0	0.6	35	13.4	10	3	18	6.2	51		
	EL PASO	1194	886.6	1020.6	18.5	-0.2	9.2	26.1	18	-6.7	11	0	20	0.0	60	26	-13	34	5	1	0	0	0.4	5	7.6	12	20	15	10	6	3.6	85
GALVESTON	29	1019.3	1023.2	19.2	6.6	12.9	27.8	18	-1.1	25	0	3	6.7	70	37	-11	30	7	2	0	0	0.7	26	10.3	8	6	17	6.2	53			
	HOUSTON INTERCON	92	1017.9	1021.2	15.4	-0.2	7.6	24	25.6	-8.3	20	0	20	-0.6	65	33	-11	30	7	2	0	0	0.7	26	10.3	8	6	17	6.2	53		
	LUBBOCK	992	907.9	1021.2	15.4	-0.2	7.6	24	25.6	-8.3	20	0	20	-0.6	65	33	-11	30	7	2	0	0	0.7	26	10.3	8	6	17	6.2	53		
	MIDLAND	869	921.1	1021.2	14.9	0.8	7.9	24	25.6	-8.3	20	0	16	0.0	65	33	-11	30	7	2	0	0	0.7	26	10.3	8	6	17	6.2	53		
PORT ARTHUR	5	1022.4	1023.1	17.9	6.9	12.4	24.4	18	-0.6	21	0	12	7.8	76	56	-18	52	3	1	Y	Y	0.9	21	10.3	11	6	12	5.1	60			
	SAN ANGELO	580	954.3	1022.2	16.6	3.2	9.9	25.6	18	-0.6	21	0	12	3.9	71	56	-18	52	3	1	Y	Y	0.9	21	10.3	11	6	12	5.1	60		
	SAN ANTONIO	240	993.9	1022.4	18.9	6.6	12.8	1.0	27.2	16	-2.8	25	0	3	6.7	70	15	-22	5	6	0	0	0.8	1	11.2	6	5	18	6.7	39		
	VICTORIA	32	1019.0	1023.0	19.1	7.5	13.3	-0.2	28.3	16	-2.8	25	0	3	8.3	77	20	-20	14	3	0	0	1.1	3	16.1	N 16	6	5	18	6.7	39	
WACO	153	1004.4	1022.8	16.8	4.8	10.8	26.7	18	-6.1	25	0	7	5.0	72	69	18	68	2	1	0	0	0.2	25	11.6	11	12	3	16	5.9	40		
	WICHITA FALLS	303	985.1	1022.6	14.8	1.3	8.1	26.1	1	-8.3	25	0	14	1.1	68	49	17	49	2	1	0	0	0.4	26	13.9	11	12	8	11	5.4	40	
	UTAH MILFORD	1533	851.3	1025.3	9.8	-6.9	1.4	17.2	26	-16.1	10	0	79	-3.3	77	6	-13	3	3	0	58	25	16.5	SW 4	14	8	9	4	4	4.6	75	
		SALT LAKE CITY	1287	878.1	1026.1	4.6	-2.8	0.9	14.4	26	-7.2	9	0	25	-3.3	77	9	-26	6	0	84	25	0.9	19	17.0	SW 4	2	6	23	8.3	25	
VERMONT FURLINGTON		101	1706.4	1019.8	-3.7	-15.2	-9.4	11.1	2	-32.2	26	0	30	-13.3	74	38	-14	9	19	0	445	279	0.3	29	14.8	5	6	20	7.5	40		
VIRGINIA LYNCHBURG		279	986.8	1021.0	8.9	-1.5	3.7	23.3	8	-15.6	26	0	18	-0.7	64	14	-67	6	6	0	Y	Y	0.9	29	13.4	5	2	9	6	16	6.0	55
KNOXVILLE	50	1020.0	1021.6	10.5	0.9	5.7	24.4	8	-10.0	26	0	15	-1.7	64	67	-72	23	7	0	Y	Y	1.2	35	15.6	8	9	14	6.2	62			
RICHMOND	50	1014.9	1021.6	9.3	-2.0	3.7	23.9	8	-15.0	26	0	20	-4.4	60	10	-72	3	7	0	Y	Y	0.2	34	13.4	11	6	13	5.6	67			
	ROANOKE	350	978.3	1021.4	9.2	-1.8	3.7	0.7	23.3	8	-16.1	26	0	19	-4.4	58	15	-44	15	8	0	0	2.0	31	22.9	4	5	13	6.4	66		
	WALLOPS ISLAND	3	982	1021.4	8.2	-1.0	3.6	-0.2	18.3	10	-13.3	26	0	20	-4.4	58	15	-44	15	8	0	0	2.0	31	22.9	4	5	13	6.4	66		
	WASHINGTON OLYMPIA	59	110.5	1017.8	9.7	3.3	6.5	17.2	15	-9.4	7	0	7	4.4	85	277	69	69	24	0	76	25	1.7	20	10.7	1	6	24	8.7	9		
QUILLAYUTE		45	1008.8	1017.8	9.1	4.2	6.6	13.9	16	-6.7	6	0	7	6.1	85	465	69	75	25	0	191	127	1.4	11.6	SE 26	1	3	27	9.2	9		
SEATTLE U		6	1008.8	1017.8	9.1	4.2	6.6	13.9	16	-6.7	6	0	7	6.1	85	465	69	75	25	0	191	127	1.4	11.6	SE 26	1	3	27	9.2	9		
SEATTLE U		6	1008.8	1017.8	9.1	4.2	6.6	13.9	16	-6.7	6	0	7	6.1	85	465	69	75	25	0	191	127	1.4	11.6	SE 26	1	3	27	9.2	9		



# CLIMATOLOGICAL DATA

## METRIC UNITS

DECEMBER 1980

State and Station	Elevation (ground)	Pressure		Temperature										Precipitation						Wind				No. of days (sunrise to sunset)			Possible sunshine																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
		Station	Sea level	Average maximum	Average minimum	Average	Departure from normal	Highest	Date	Lowest	No. of days		Average dew point	Average relative humidity	Total	Departure from normal	Greatest in 24 hours	.25 mm. or more	No. of days	Snow, ice pellets		Resultant speed	Resultant direction					Speed	Direction	Date																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
											Max. 32.2 °C or above	Min. 0 °C or lower								Total	Ice pellets																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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# HEATING DEGREE DAYS

(Base 65°F.)

DECEMBER 1980

State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month	State and Station	Current season		Normals July through this month
	This month	Period July through this month			This month	Period July through this month			This month	Period July through this month			This month	Period July through this month	
ALABAMA				IDAHO				NEBRASKA				TENNESSEE			
BIRMINGHAM U	658	1231	978	BOISE	983	2287	2321	GRAND ISLAND	1044	2471	2457	BRISTOL	892	1836	1711
BIRMINGHAM	642	1202	1148	LEWISTON	757	1962	2221	LINCOLN	1120	2268	2361	CHATTANOOGA	736	1456	1412
HUNTSVILLE	749	1448	1312	POCATELLO	1026	2745	2787	NORFOLK	1190	2502	2663	KNOXVILLE	761	1591	1368
MOBILE	420	718	635					NORTH PLATTE	1019	2413	2643	MEMPHIS	586	1399	1263
MONTGOMERY	523	983	911	ILLINOIS				OMAHA (EPPELEY)	1198	2535	2275	NASHVILLE	739	1494	1451
				CAIRO U	774	1523	1472	OMAHA (NORTH)	1157	2342	2489	ASH RIDGE	821	1693	1573
ALASKA				CHICAGO O HARE	1146	2471	2424	SCOTT'S BLUFF	859	2053	2650				
ANCHORAGE	1990	5065	4874	MOLINE	1140	2516	2398	VALENTINE	1128	2594	2811	TEXAS			
ANNETTE	946	2851	2988	PEORIA	1112	2369	2105					ARILENE	485	1006	1002
BARROW	2501	9215	8607	ROCKFORD	1222	2658	2578	NEVADA				AMARILLO	723	1700	1609
BARTER ISLAND	2514	8557	8436	SPRINGFIELD	1028	2147	2101	ELKO	947	2310	3014	AUSTIN	361	692	643
BETHEL	2044	5791	5705					ELY	1026	2801	3072	BROWNSVILLE	166	341	185
BETHEL	2868	7367	7167	INDIANA				LAS VEGAS	374	711	1045	CORPUS CHRISTI	254	501	307
BIG DELTA	2679	6266	6267	EVANSVILLE	852	1796	1794	RENO	895	2130	2430	DALLAS FT WORTH	486	933	877
COLD BAY	1034	3603	4242	FORT WAYNE	1090	2380	2337	WINNEMUCCA	958	2365	2669	DEL RIO	353	672	612
FAIRBANKS	2766	6482	6507	INDIANAPOLIS	1022	2239	2126					EL PASO	503	1175	1133
GULKANA	2797	6628	6386	SOUTH BEND	1047	2253	2399	NEW HAMPSHIRE				GALVESTON	306	571	379
HOMER	1617	4658	4637					CONCORD	1417	3218	2786	HOUSTON INTERCON	323	645	512
JUNEAU	1333	3807	3957	IOWA				MT WASHINGTON OBS	1907	6355	5884	LUBBOCK	590	1366	1391
KING SALMON	1849	5179	5116	DES MOINES	1182	2427	2513					MIDLAND	575	1299	1029
KODIAK	1105	3522	3848	DUBUQUE	1266	2715	2769	NEW JERSEY				PORT ARTHUR	339	657	561
KOTLEGE	2336	6586	6673	SIoux CITY	1254	2624	2649	ATLANTIC CITY	1042	2185	1794	SAN ANGELO	464	944	889
MC GRATH	2807	6910	6543	WATERLOO	1323	2847	2832	ATLANTIC CITY U	871			SAN ANTONIO	331	638	584
NOME	1969	5815	6132					NEWARK	1066	2062	1787	VICTORIA	303	593	423
ST. PAUL ISLAND	1079	4581	4709	KANSAS				TRFNTON U	1001	1990	1785	WACO	427	832	763
TALKEETNA	2144	5331	5290	CONCORDIA	498	1937	2132					WICHITA FALLS	567	1154	1106
UNALASKA				ODGE CITY	822	1653	1934	NEW MEXICO							
VALDEZ	1561	4541	4752	GOODLAND	878	2057	2372	ALBUQUERQUE	752	1733	1733	UTAH			
YAKUTAT	1235	3683	4157	TOPEKA	1001	2001	2006	CLAYTON	682	1754	2005	MILFORD	935	2345	2529
				WICHITA	864	1866	1795	ROSWELL	645	1528	1552	SALT LAKE CITY	965	2115	2365
ARIZONA				KENTUCKY				NEW YORK				VERMONT			
FLAGSTAFF	774	2170	2883	COVINGTON	988	2179	1921	ALBANY	1303	2979	2562	BURLINGTON	1545	3385	2916
PHOENIX	122	242	587	LEXINGTON	852	1906	1813	BINGHAMTON	1349	3056	2721				
TUCSON	210	471	651	LOUISVILLE	821	1697	1787	RUFFALO	1224	2611	2508	VIRGINIA			
WINSLOW	753	1766	1692					NEW YORK U	1070	1938	1681	LYNCHBURG	407	1736	1650
YUMA	83	142	384	LOUISIANA				NEW YORK KENNEDY	962	1838	1777	NORFOLK	699	1340	1256
				BATON ROUGE	446	823	643	NEW YORK LA GUARDIA	1052	2019	1696	RICHMOND	813	1651	1510
ARKANSAS				LAKE CHARLES	400	765	551	ROCHESTER	1243	2632	2432	POANOK	407	1720	1672
FORT SMITH	694	1342	1302	NEW ORLEANS	363	593	546	SYRACUSE	1307	2740	2405	WALLOPS ISLAND	814	1607	1470
LITTLE ROCK	673	1310	1314	SHREVEPORT	468	959	834								
NO. LITTLE ROCK	671	1279	1221					NORTH CAROLINA				WASHINGTON			
				MAINE				ASHEVILLE	778	1663	1695	OLYMPIA	653	1936	2278
CALIFORNIA				CARIBOU	1733	4052	3714	CAPE HATTERAS R	549	1066	889	QUILLAYUTE	647	2248	2401
BAKERSFIELD	455	724	861	PORTLAND	1349	2973	2785	CHARLOTTE	689	1427	1260	SEATTLE	588	1609	1896
BISHOP	684	1576	1693					GREENSBORO	762	1615	1521	SEATTLE-TACOMA	639	1853	2101
BLUE CANYON	523	1574	1952	MARYLAND				PALEIGH	747	1465	1386	SPOKANE	977	2665	2798
EUREKA U	422	1931	2006	BALTIMORE	908	1859	1765	WILMINGTON	613	1129	911	STAMPEDE PASS R	900	3664	3936
FRESNO	553	940	1030									WALLA WALLA U	748	1810	1956
LONG BEACH	195	302	505	MASSACHUSETTS				NORTH DAKOTA	1438	3174	3483	YAKIMA	929	2235	2509
LGS ANGELES	158	266	571	BLUE HILL OBS R	1208	2626	2272	BISMARCK	1616	3568	3542				
LOS ANGELES U	85	128	371	ROSTON	1120	2292	1971	FAOPO	1616	3568	3542	WEST VIRGINIA			
MT SHASTA R	401	1124	2282	WORCESTER	1259	2838	2518	WILLISTON	1511	3303	3574	BECKLEY	970	2249	2226
OAKLAND	427	942	1107									CHARLESTON	882	1921	1794
RED BLUFF	449	831	998	MICHIGAN				OHIO				ELKINS	1050	2492	2379
SACRAMENTO	596	1078	1061	ALPENA	1430	3307	3192	AKRON	1093	2439	2328	HUNTINGTON	978	1884	1795
SAN DIEGO	133	214	462	DETROIT	1183	2577	2247	CINCINNATI ABBE OB	947	2003	1843	PARKERSBURG U	862	2078	1841
SAN FRANCISCO	436	1115	1145	DETROIT METRO	1201	2711	2372	CLEVELAND	1125	2511	2253				
SAN FRANCISCO U	350	1188	1244	FLINT	1252	2903	2615	COLUMBUS	1000	2198	2188	WISCONSIN			
SANTA MARIA	290	946	1146	GRAND RAPIDS	1227	2755	2513	DAYTON	1043	2338	2130	GREEN BAY	1398	3163	3051
STOCKTON	613	1034	1052	HOUGHTON LAKE	1423	3370	3172	MANSFIELD	1067	2407	2171	LA CROSSE	1362	2933	2805
				LANSING	1271	2861	2564	TOLSON	1276	2704	2410	MADISON	1303	3026	2945
COLORADO				MUSKEGON	1228	2786	2516	YOUNGSTOWN	1220	2762	2396	MILWAUKEE	1250	2809	2751
ALAMOSA	1136	3294	3566	SAULT STE MARIE	1613	4017	3453					WYOMING			
COLORADO SPRINGS	776	2118	2517					OKLAHOMA				CASPER	943	2660	2931
DENVER	731	1866	2300	MINNESOTA				OKLAHOMA CITY	710	1357	1409	CHEYENNE	812	2402	2803
GRAND JUNCTION	765	1821	2241	DULUTH	1650	3965	3767	TULSA	703	1326	1402	LANDER	943	2707	3119
PUEBLO	731	1877	2108	INTERNATIONAL FALLS	1873	4279	4157					SHERIDAN	1140	2778	3010
				MINNEAPOLIS	1396	3056	3093	OPPGON							
CONNECTICUT				ROCHESTER	1416	3149	3127	ASTORIA	533	1790	2136				
BRIDGEPORT	1038	2022	1840	ST CLOUD	1491	3431	3397	PLUMS U	1110	3061	2899				
HARTFORD	1246	2602	2354					EUGENE	697	1787	1888				
				MISSISSIPPI				WEDFORD	827	1836	1972				
DELAWARE				JACKSON	575	1096	896	PENDELTON	794	2038	2116				
WILMINGTON	985	1972	1804	MEDICIAN	539	1007	972	PORTLAND	644	1517	1914				
								SALEM	682	1784	1927				
DIST. OF COLUMBIA				MISSOURI				SEXTON SUMMIT R	621	2073	2426				
WASHINGTON DULLES	928	1967	1904	COLUMBIA REGIONAL	462	2026	1920	PENNSYLVANIA							
WASHINGTON NATIONAL	774	1454	1570	KANSAS CITY	1011	2030	2035	ALLENSTOWN	1032	2146	2179				
				ST JOSEPH	1007	2152	2063	ER							

# MONTHLY AND SEASONAL COOLING DEGREE DAYS

(Base 65°F)

1980

State and Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total for Season	Normals Jan.-Dec.
ALABAMA														
BIRMINGHAM	26	182	347	632	566	420	36	0	0	0	0	0	2257	2219
BIRMINGHAM	26	182	347	632	566	420	36	0	0	0	0	0	2257	2219
HUNTSVILLE	17	61	157	338	542	508	28	1	0	0	0	0	1926	1868
MOBILE	17	61	157	338	542	508	28	1	0	0	0	0	1926	1868
MONTEGOMERY	17	61	157	338	542	508	28	1	0	0	0	0	1926	1868
ALASKA														
ANCHORAGE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANCHORAGE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BARBER ISLAND	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BETHEL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BETTLES	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BIG DELTA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COLD BAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAIRBANKS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAIRBANKS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HOMER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JUNEAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KING SALMON	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KODIAK	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KOTIKOFF	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MC GRATH	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOKE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ST. PAUL ISLAND	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TALKEETNA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNALAKLEET	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VALDEZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0
YAKUTAT	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ARIZONA														
FLAGSTAFF	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHOENIX	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TUCSON	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WINSLOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0
YUMA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ARKANSAS														
FORT SMITH	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LITTLE ROCK	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO. LITTLE ROCK	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALIFORNIA														
BANISTERVILLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BISHOP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BLUE CANYON	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EUREKA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FRESNO	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LONG BEACH	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LOS ANGELES	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LOS ANGELES	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MT. SHASTA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OAKLAND	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RED BLUFF	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SACRAMENTO	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAN DIEGO	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAN FRANCISCO	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAN FRANCISCO U.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SANTA MARIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STOCKTON	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COLORADO														
ALAMOSA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COLORADO SPRINGS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DENVER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRAND JUNCTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PUEBLO	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CONNECTICUT														
BRIDGEPORT	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HARTFORD	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DELAWARE														
WILMINGTON	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DIST. OF COLUMBIA														
WASHINGTON DULLES	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WASHINGTON NATIONAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FLORIDA														
APALACHICOLA U.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DAYTONA BEACH	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FORT MYERS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JACKSONVILLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KEY WEST	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIAMI	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ORLANDO	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PENSACOLA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TALLAHASSEE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TAMPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEST PALM BEACH	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GEORGIA														
ATHENS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ATLANTA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AUGUSTA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COLUMBUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MACON	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ROME	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAVANNAH	0	0	0	0	0	0	0	0	0	0	0	0	0	0



# MONTHLY AND SEASONAL COOLING DEGREE DAYS

(Base 65°F)

1980

State and Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total for Season	Normals Jan.- Dec.
<b>HAWAII</b>														
HILLO	213	227	234	293	390	385	405	316	328	313	269	295	3668	3066
HONOLULU	222	220	317	340	419	442	501	504	503	476	395	295	4633	4221
MAHULU	266	253	335	334	442	457	512	488	484	462	401	347	4781	3732
LIHUE	229	186	258	261	330	353	417	438	429	369	328	283	3881	3719
<b>IDAHO</b>														
BOISE	0	0	0	3	25	68	251	117	38	2	0	0	504	714
LEWISTON	0	0	0	10	15	37	271	160	51	10	0	0	554	657
POCATELLO	0	0	0	3	0	17	125	70	8	0	0	0	221	437
<b>ILLINOIS</b>														
CAIRO U	0	0	0	29	174	393	652	569	309	53	3	0	2182	1806
CHICAGO O HARE	0	0	0	10	43	101	338	342	107	2	0	0	943	664
MOLINE	0	0	0	11	65	158	395	343	107	1	0	0	1080	893
PEORIA	0	0	0	6	70	160	425	378	156	1	0	0	1196	968
ROCKFORD	0	0	0	6	52	117	329	278	80	0	0	0	862	714
SPRINGFIELD	0	0	0	10	88	228	515	452	169	20	0	0	1482	1116
<b>INDIANA</b>														
EVANSVILLE	0	0	0	5	102	264	535	521	257	39	3	0	1726	1364
FORT WAYNE	0	0	0	1	38	115	326	290	107	10	0	0	587	748
INDIANAPOLIS	0	0	0	3	68	168	425	368	139	6	0	0	1177	974
SOUTH BEND	0	0	0	9	65	145	367	319	107	6	0	0	1018	695
<b>IOWA</b>														
DES MOINES	0	0	0	22	83	200	469	353	134	2	0	0	1267	928
DUBUQUE	0	0	0	11	76	136	347	257	78	0	0	0	905	666
SIOUX CITY	0	0	0	24	57	185	430	279	90	4	0	0	1069	932
WATERLOO	0	0	0	24	50	151	337	262	76	0	0	0	900	675
<b>KANSAS</b>														
CONCORDIA	0	0	0	16	56	334	634	485	212	26	4	0	1771	1302
DODGE CITY	0	0	0	18	62	410	695	538	288	56	5	0	2072	1411
GOODLAND	0	0	0	4	11	230	447	324	117	6	0	0	1139	925
TOPEKA	0	0	0	9	69	356	670	496	220	9	0	0	1829	1361
WICHITA	0	0	0	3	75	456	796	635	340	52	1	0	2358	1673
<b>KENTUCKY</b>														
COVINGTON	0	0	0	0	98	187	364	363	166	5	0	0	1183	1080
LEXINGTON	0	0	0	4	87	210	438	415	199	17	0	0	1370	1197
LOUISVILLE	0	0	0	8	134	266	519	504	276	31	1	0	1739	1268
<b>LOUISIANA</b>														
BATON ROUGE	0	15	40	84	352	514	586	539	461	75	15	10	2691	2585
LAKE CHARLES	6	12	31	52	337	505	608	555	483	108	24	9	2730	2739
NEW ORLEANS	10	13	70	85	409	554	653	640	561	160	51	17	3223	2706
SHREVEPORT	1	6	6	43	298	560	686	643	522	86	22	1	2874	2538
<b>MAINE</b>														
CARIBOU	0	0	0	0	0	37	71	78	8	0	0	0	194	128
PORTLAND	0	0	0	0	1	50	163	205	67	0	0	0	486	252
<b>MARYLAND</b>														
BALTIMORE	0	0	0	0	97	203	415	431	245	17	0	0	1408	1108
<b>MASSACHUSETTS</b>														
BLUE HILL OBS R	0	0	0	0	7	72	258	213	87	0	0	0	637	457
BOSTON	0	0	0	0	18	114	347	299	137	1	0	0	916	661
WORCESTER	0	0	0	0	8	48	206	178	57	0	0	0	497	387
<b>MICHIGAN</b>														
ALPENA	0	0	0	0	9	43	114	133	19	0	0	0	318	208
DETROIT	0	0	0	6	58	118	307	336	103	5	0	0	933	743
DETROIT METRO	0	0	0	3	38	69	246	248	79	3	0	0	686	654
FLINT	0	0	0	3	27	55	181	183	27	0	0	0	476	438
GRAND RAPIDS	0	0	0	6	34	96	247	245	53	0	0	0	681	575
HOUGHTON LAKE	0	0	0	2	17	43	98	124	16	0	0	0	300	250
LANSING	0	0	0	4	33	86	239	223	46	0	0	0	631	535
MUSKEGON	0	0	0	1	20	54	191	190	36	0	0	0	492	469
SAULT STE MARIE	0	0	0	0	10	16	19	48	6	0	0	0	99	139
<b>MINNESOTA</b>														
DULUTH	0	0	0	0	25	46	126	40	3	0	0	0	240	176
INTERNATIONAL FALLS	0	0	0	2	69	51	142	62	0	0	0	0	331	176
MINNEAPOLIS	0	0	0	16	82	121	322	194	39	1	0	0	774	585
ROCHESTER	0	0	0	14	69	121	262	164	41	0	0	0	671	474
ST CLOUD	0	0	0	6	44	61	202	111	27	0	0	0	451	426
<b>MISSISSIPPI</b>														
JACKSON	0	11	11	28	253	476	652	619	527	52	14	1	2644	2321
MERIDIAN	0	16	10	35	233	425	612	586	487	45	4	0	2453	2231
<b>MISSOURI</b>														
COLUMBIA REGIONAL	0	0	0	13	76	319	688	523	211	17	0	0	1849	1269
KANSAS CITY	0	0	0	21	69	216	632	483	210	15	0	0	1746	1285
ST JOSEPH	0	0	0	15	86	346	556	410	170	10	0	0	1593	1334
ST LOUIS	0	0	0	23	120	320	626	580	262	31	2	0	1964	1475
SPRINGFIELD	0	0	0	3	87	318	580	565	290	27	1	0	1889	1382
<b>MONTANA</b>														
BILLINGS	0	0	0	20	40	99	339	105	46	26	0	0	675	498
GLASGOW	0	0	0	12	60	88	234	59	21	7	0	0	483	438
GREAT FALLS	0	0	0	12	30	31	156	37	21	18	0	0	305	339
HAVRE	0	0	0	2	38	64	169	27	18	11	0	0	329	395
HELENA	0	0	0	0	14	14	104	27	6	0	0	0	161	256
KALISPELL	0	0	0	0	6	0	44	13	0	0	0	0	63	117
MILES CITY	0	0	0	22	78	133	364	119	40	12	0	0	776	752
MISSOULA	0	0	0	0	4	13	74	26	8	0	0	0	125	188

# MONTHLY AND SEASONAL COOLING DEGREE DAYS

(Base 65°F)

1960

State and Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total for Season	Normals Jan.- Dec.
NEBRASKA														
GRAND ISLAND	0	0	0	20	54	241	493	777	117	9	0	0	1349	1036
LINCOLN	0	0	0	13	73	293	542	433	142	1	0	0	1497	1148
NORTH PLATTE	0	0	0	21	61	236	440	374	115	0	0	0	1214	925
OMAHA (DORSEY)	0	0	0	19	27	243	411	329	74	0	0	0	1054	802
OMAHA (NORTH)	0	0	0	24	61	254	459	344	107	0	0	0	1264	1173
SCOTTSDALE	0	0	0	1	22	234	417	343	104	3	0	0	1110	949
VALENTINE	0	0	0	15	34	198	404	255	78	0	0	0	1044	666
NEVADA														
ELKO	0	0	0	0	0	36	211	104	25	0	0	0	381	342
ELY	0	0	0	0	0	12	116	78	0	0	0	0	208	207
LAS VEGAS	0	0	0	0	160	575	842	788	498	211	15	0	3157	2946
RENO	0	0	0	0	2	32	218	119	24	1	0	0	397	329
WINNECOCK	0	0	0	0	8	48	262	126	19	2	0	0	465	407
NEW HAMPSHIRE														
CONCORD	0	0	0	0	5	64	197	145	51	0	0	0	458	349
MT WASHINGTON OBS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW JERSEY														
ATLANTIC CITY	0	0	0	0	47	88	238	262	132	6	0	0	773	864
ATLANTIC CITY U	0	0	0	0	39	109	250	219	159	0	0	0	878	
NEWARK	0	0	0	0	97	187	435	427	209	10	0	0	1365	1024
TRENTON	0	0	0	0	83	172	416	418	196	9	0	0	1254	968
NEW MEXICO														
ALBUQUERQUE	0	0	0	0	27	375	557	792	160	14	0	0	1526	1316
CLAYTON	0	0	0	0	8	257	433	290	117	7	0	0	1110	767
ROSWELL	0	0	0	0	152	564	636	430	223	21	0	0	2035	1560
NEW YORK														
ALBANY	0	0	0	0	24	63	230	184	77	0	0	0	583	574
PINGHAMTON	0	0	0	0	70	61	183	191	66	1	0	0	532	169
BUFFALO	0	0	0	0	72	56	217	242	58	2	0	0	607	437
NEW YORK U	0	0	0	0	94	188	448	480	213	11	0	0	1435	1068
NEW YORK KENNEDY	0	0	0	0	48	139	365	412	178	6	0	0	1148	861
NEW YORK LA GUARDIA	0	0	0	0	71	180	430	413	192	8	0	0	1294	1048
ROCHESTER	0	0	0	0	46	73	253	294	76	2	0	0	744	531
SYRACUSE	0	0	0	0	41	62	243	279	80	1	0	0	706	551
NORTH CAROLINA														
ASHEVILLE	0	0	0	8	64	210	396	311	198	4	0	0	1191	872
CAPE HATTERAS R	0	0	0	35	153	252	449	445	335	54	0	0	1726	1550
CHARLOTTE	0	0	0	26	133	275	473	497	328	24	0	0	1760	1596
GREENSBORO	0	0	0	14	102	189	424	474	281	12	0	0	1458	1341
RALEIGH	0	0	0	45	194	306	441	460	321	38	6	0	1807	1394
WILMINGTON	0	0	0	71	198	364	560	540	419	70	2	0	2225	1964
NORTH DAKOTA														
BISMARCK	0	0	0	8	64	103	227	84	16	0	0	0	502	487
FARGO	0	0	0	18	102	89	222	119	31	1	0	0	582	473
WILLISTON	0	0	0	7	107	114	265	84	22	4	0	0	603	422
OHIO														
AKRON	0	0	0	0	37	69	244	306	109	0	0	0	765	634
CINCINNATI ARBE OB	0	0	0	2	119	207	474	438	208	6	0	0	1454	1188
CLEVELAND	0	0	0	0	27	83	235	263	97	0	0	0	705	613
COLUMBUS	0	0	0	0	61	132	343	344	151	1	0	0	1034	809
DAYTON	0	0	0	0	61	148	373	378	164	6	0	0	1130	936
MANSFIELD	0	0	0	0	17	57	249	285	102	1	0	0	711	818
TOLEDO	0	0	0	3	35	106	275	265	84	4	0	0	772	685
YOUNGSTOWN	0	0	0	0	27	41	153	203	66	0	0	0	486	518
OKLAHOMA														
OKLAHOMA CITY	0	0	0	7	155	498	729	721	366	65	11	2	2554	1876
TULSA	0	0	0	43	200	533	833	774	419	69	6	4	2881	1949
OREGON														
ASTORIA	0	0	0	0	0	0	13	0	7	8	0	0	28	13
BURNS	0	0	0	0	0	2	81	11	0	0	0	0	94	289
EUGENE	0	0	0	0	0	0	91	23	16	17	0	0	142	239
MEADOWS	0	0	0	0	2	16	257	134	78	35	0	0	522	562
PENDLETON	0	0	0	2	5	13	232	101	44	20	0	0	417	656
PORTLAND	0	0	0	1	0	2	141	75	35	17	0	0	266	300
SALEM	0	0	0	0	0	0	73	21	17	9	0	0	120	232
SEXTON SUMMIT R	0	0	0	0	0	0	64	13	37	56	0	0	170	137
PACIFIC AREA														
GUAM TAGUAC P	358	367	397	434	456	445	457	476	437	465	466	412	5170	5011
JOHNSON	408	373	442	442	490	503	541	552	545	524	464	459	5745	5086
KOROR R	498	449	514	499	546	509	508	500	507	545	548	543	6170	6008
KWAJALEIN	529	501	576	515	517	529	542	557	526	540	519	551	6421	6164
MAJURO	514	478	517	507	519	516	516	518	509	542	515	502	6154	5904
PAGO PAGO	527	495	543	530	457	475	446	453	467	465	513	523	5870	5325
PONAPE R	531	486	557	502	507	507	514	512	487	515	511	544	6198	5652
TRUK MOEN ISLAND	507	483	527	531	534	512	496	505	500	483	495	509	6082	5888
WAK	400	726	415	446	493	542	607	580	597	540	506	477	5924	5455
YAP R	448	449	503	510	522	483	489	513	467	498	490	486	5896	5916
PENNSYLVANIA														
ALLENTOWN	0	0	0	0	59	147	388	413	194	6	0	0	1207	772
ERIE	0	0	0	0	20	56	162	234	75	4	0	0	551	373
HARRISBURG	0	0	0	0	57	138	355	350	145	0	0	0	1045	1025
PHILADELPHIA	0	0	0	0	89	194	428	470	244	10	0	0	1435	1104
PITTSBURGH	0	0	0	0	34	115	317	306	118	0	0	0	890	647
SCRANTON	0	0	0	0	42	107	263	322	122	3	0	0	859	608
WILLIAMSPORT	0	0	0	0	74	104	275	333	128	0	0	0	878	698
RHODE ISLAND														
BLOCK ISLAND	0	0	0	0	0	27	245	222	70	0	0	0	564	359
PROVIDENCE	0	0	0	0	21	54	717	272	122	0	0	0	811	532

# MONTHLY AND SEASONAL COOLING DEGREE DAYS

(Base 65°F)

1980

State and Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total for Season	Normals Jan.- Dec.
<b>SOUTH CAROLINA</b>														
CHARLESTON	0	9	7	69	221	407	549	539	451	87	11	1	2145	2078
CHARLESTON U	0	9	5	100	299	432	574	557	476	123	12	2	2589	2354
COLUMBIA	0	0	0	47	159	328	530	487	376	35	2	0	1964	2087
GREENVILLE-SPRING	0	0	0	27	135	292	519	454	294	16	0	0	1737	1573
<b>SOUTH DAKOTA</b>														
ABERDEEN	0	0	0	14	55	98	251	150	33	0	0	0	603	566
HURON	0	0	0	18	56	139	269	199	66	10	0	0	757	711
RAPID CITY	0	0	0	6	25	123	315	136	47	14	0	0	667	661
SIOUX FALLS	0	0	0	23	46	153	290	207	74	6	0	0	799	719
<b>TENNESSEE</b>														
BRISTOL	2	0	0	6	61	179	359	377	215	6	0	0	1202	1107
CHATTANOOGA	0	0	0	8	111	272	562	540	360	10	1	0	1604	1636
KNOXVILLE	0	0	0	16	136	315	538	525	290	12	0	0	1832	1569
MEMPHIS	0	0	0	40	249	480	744	695	476	80	18	2	2784	2029
NASHVILLE	0	0	0	17	131	322	562	527	344	44	1	0	1948	1694
OKA RIDGE	0	0	0	6	92	244	491	435	291	13	0	0	1572	1367
<b>TEXAS</b>														
ABILENE	0	7	6	91	237	588	762	660	405	119	21	5	2001	2466
AMARILLO	0	0	0	4	58	408	552	429	211	26	0	0	1698	1433
AUSTIN	6	11	62	106	322	598	718	659	510	182	45	19	3237	2908
BROWNSVILLE	27	62	198	230	536	661	707	623	602	109	91	67	4169	3874
CORPUS CHRISTI	45	52	159	166	405	573	649	570	530	247	56	34	3486	3474
DALLAS FT WORTH	0	0	11	52	320	668	844	737	485	117	35	10	3279	2587
DEL RIO	0	25	81	206	417	671	785	629	567	233	53	5	3363	3374
EL PASO	0	0	0	34	198	646	693	546	329	63	0	0	2509	2098
GALVESTON	2	1	12	99	339	512	604	622	542	228	52	0	2993	3004
HOUSTON INTERCON	4	31	49	86	388	610	705	677	557	162	52	26	3343	2889
LUBBOCK	0	0	0	32	172	549	605	488	272	48	3	0	2169	1647
MIDLAND	0	0	0	17	166	514	600	498	260	33	2	0	2090	2250
PORT ARTHUR	0	27	47	69	359	546	633	603	534	152	37	15	3030	2798
SAN ANGELO	0	0	0	73	229	535	685	610	369	90	19	2	2620	2702
SAN ANTONIO	11	14	61	127	355	614	725	635	567	245	51	26	3431	2994
VICTORIA	15	24	73	114	383	582	684	599	526	202	41	29	3272	3140
WACO	0	6	25	49	278	611	758	705	499	126	39	12	3107	2863
WICHITA FALLS	0	0	0	52	204	603	843	745	427	80	7	2	2963	2611
<b>UTAH</b>														
MILFORD	0	0	0	0	0	70	307	191	28	0	0	0	596	688
SALT LAKE CITY	0	0	0	9	10	159	399	201	99	1	0	0	978	927
<b>VERMONT</b>														
BURLINGTON	0	0	0	0	24	78	184	184	34	0	0	0	509	396
<b>VIRGINIA</b>														
LYNCHBURG	0	0	0	15	99	159	403	432	262	18	0	0	1388	1100
NORFOLK	0	0	0	11	153	274	500	497	351	46	1	1	1833	1441
RICHMOND	0	0	1	25	157	243	472	494	313	23	1	0	1729	1353
ROANOKE	0	0	0	21	78	171	412	374	231	13	0	0	1300	1030
WALLOPS ISLAND	0	0	0	0	87	197	318	339	236	14	0	0	1190	1107
<b>WASHINGTON</b>														
OLYMPIA	0	0	0	0	0	0	21	19	7	2	0	0	45	101
QUILLAYUTE	0	0	0	0	0	0	11	0	0	0	0	0	11	8
SEATTLE	0	0	0	0	0	0	38	22	7	5	0	0	73	183
SEATTLE-TACOMA	0	0	0	0	0	0	34	15	7	0	0	0	54	129
SPOKANE	0	0	0	1	3	2	156	56	6	3	0	0	227	358
STAMPEDE PASS R	0	0	0	0	0	0	6	3	0	0	0	0	9	16
WALLA WALLA U	0	0	0	12	27	48	324	181	77	22	0	2	693	862
YAKIMA	0	0	0	2	8	29	198	92	34	2	0	0	365	479
<b>WEST INDIES</b>														
SAN JUAN P.R.	414	404	446	479	590	610	633	628	591	608	522	494	6417	4982
<b>WEST VIRGINIA</b>														
BECKLEY	0	0	0	4	24	66	235	207	94	2	0	0	632	490
CHARLESTON	0	0	0	6	71	147	370	356	182	9	0	0	1143	1055
ELKINS	0	0	0	0	16	57	169	202	69	0	0	0	513	389
HUNTINGTON	0	0	0	10	89	190	403	401	206	11	0	0	1310	1098
PARKERSBURG U	0	0	0	0	70	130	366	344	161	3	0	0	1074	1045
<b>WISCONSIN</b>														
GREEN BAY	0	0	0	5	27	64	192	146	18	0	0	0	452	386
LA CROSSE	0	0	0	20	96	180	416	293	79	0	0	0	1084	695
MADISON	0	0	0	11	39	100	268	183	31	0	0	0	629	460
MILWAUKEE	0	0	0	9	25	50	207	164	29	0	0	0	484	450
<b>WYOMING</b>														
CASPER	0	0	0	0	1	64	232	93	20	0	0	0	410	458
CHEYENNE	0	0	0	0	0	88	205	94	21	0	0	0	408	327
LANDER	0	0	0	0	3	74	231	97	19	0	0	0	424	383
SHERIDAN	0	0	0	2	9	33	202	75	14	3	0	0	338	446



# STORM SUMMARY

SEPTEMBER 1964

STATE	TORNADOES					HAILSTORMS				WINDSTORMS				LIGHTNING				@HEAVY SNOWSTORMS AND BLIZZARDS				# ICE STORMS				φ ALL OTHER			
	NUMBER	DAYS	DEATHS	INJURIES	† DAMAGE	DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE		DEATHS	INJURIES	† DAMAGE	
								PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS			PROP. ERTY	CROPS				
Alabama	*																												
Alaska									7																				
Arizona	*																												
Arkansas																													
California									4																				
Colorado									*																				
Connecticut									*																				
Delaware	*																												
Florida	*																												
Georgia																													
Hawaii	†																												
Idaho																													
Illinois	*																												
Indiana	*																												
Iowa																													
Kansas	*																												
Kentucky	*																												
Louisiana	*																												
Maine									6																				
Maryland & DC									4																				
Massachusetts									4																				
Michigan									4																				
Minnesota	*																												
Mississippi	*																												
Missouri	*																												
Montana	*																												
Nebraska																													
Nevada									3																				
New Hampshire									6																				
New Jersey	*																												
New Mexico	*																												
New York									5																				
North Carolina																													
North Dakota	*								4																				
Ohio																													
Oklahoma	*																												
Oregon																													
Pacific	†																												
Pennsylvania									4																				
Puerto Rico	*																												
Rhode Island	*																												
South Carolina																													
South Dakota	*																												
Tennessee	*																												
Texas	1	1			2		6	5						5					2										
Utah	*																												
Vermont	*																												
Virginia									3				5																
Virgin Islands	*																												
Washington																													
West Virginia	*																												
Wisconsin	*																												
Wyoming	*																												

## Average monthly values

DECEMBER 1980

[illegible]



## Average monthly values

MA, C. 1703. 50

- 19 -



## Average monthly values

DECEMBER 1980

# RAWINSONDE DATA

Average monthly values

Continued from

HONOLULU, HAWAII, 1076 M										LAKE MEAD, ARIZ., 1008 M									
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Resultant Wind Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Resultant Wind Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Resultant Wind Speed m.p.s.	No. of observations
570	24	30	28.3	25.1	10	1.8	25	30	28.3	25.1	10	1.8	25	30	28.3	25.1	10	1.8	25
1000	24	31	27.9	24.9	10	1.8	25	31	27.9	24.9	10	1.8	25	31	27.9	24.9	10	1.8	25
950	24	31	27.4	24.0	10	1.7	25	31	27.4	24.0	10	1.7	25	31	27.4	24.0	10	1.7	25
900	24	31	27.0	23.6	10	1.7	25	31	27.0	23.6	10	1.7	25	31	27.0	23.6	10	1.7	25
850	24	31	26.6	23.2	10	1.7	25	31	26.6	23.2	10	1.7	25	31	26.6	23.2	10	1.7	25
800	24	31	26.2	22.8	10	1.7	25	31	26.2	22.8	10	1.7	25	31	26.2	22.8	10	1.7	25
750	24	31	25.8	22.4	10	1.7	25	31	25.8	22.4	10	1.7	25	31	25.8	22.4	10	1.7	25
700	24	31	25.4	22.0	10	1.7	25	31	25.4	22.0	10	1.7	25	31	25.4	22.0	10	1.7	25
650	24	31	25.0	21.6	10	1.7	25	31	25.0	21.6	10	1.7	25	31	25.0	21.6	10	1.7	25
600	24	31	24.6	21.2	10	1.7	25	31	24.6	21.2	10	1.7	25	31	24.6	21.2	10	1.7	25
550	24	31	24.2	20.8	10	1.7	25	31	24.2	20.8	10	1.7	25	31	24.2	20.8	10	1.7	25
500	24	31	23.8	20.4	10	1.7	25	31	23.8	20.4	10	1.7	25	31	23.8	20.4	10	1.7	25
450	24	31	23.4	20.0	10	1.7	25	31	23.4	20.0	10	1.7	25	31	23.4	20.0	10	1.7	25
400	24	31	23.0	19.6	10	1.7	25	31	23.0	19.6	10	1.7	25	31	23.0	19.6	10	1.7	25
350	24	31	22.6	19.2	10	1.7	25	31	22.6	19.2	10	1.7	25	31	22.6	19.2	10	1.7	25
300	24	31	22.2	18.8	10	1.7	25	31	22.2	18.8	10	1.7	25	31	22.2	18.8	10	1.7	25
250	24	31	21.8	18.4	10	1.7	25	31	21.8	18.4	10	1.7	25	31	21.8	18.4	10	1.7	25
200	24	31	21.4	18.0	10	1.7	25	31	21.4	18.0	10	1.7	25	31	21.4	18.0	10	1.7	25
150	24	31	21.0	17.6	10	1.7	25	31	21.0	17.6	10	1.7	25	31	21.0	17.6	10	1.7	25
100	24	31	20.6	17.2	10	1.7	25	31	20.6	17.2	10	1.7	25	31	20.6	17.2	10	1.7	25
50	24	31	20.2	16.8	10	1.7	25	31	20.2	16.8	10	1.7	25	31	20.2	16.8	10	1.7	25
0	24	31	19.8	16.4	10	1.7	25	31	19.8	16.4	10	1.7	25	31	19.8	16.4	10	1.7	25

LITTLE ROCK, AR., 1003 M										MEMPHIS, TENN., 974 M									
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Resultant Wind Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Resultant Wind Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Resultant Wind Speed m.p.s.	No. of observations
570	31	27	3.6	-1.1	31	1.1	31	27	3.6	-1.1	31	1.1	31	27	3.6	-1.1	31	1.1	31
1000	20	27	1.4	-3.8	37	1.9	30	27	1.4	-3.8	37	1.9	30	27	1.4	-3.8	37	1.9	30
950	31	27	1.4	-4.1	37	1.9	31	27	1.4	-4.1	37	1.9	31	27	1.4	-4.1	37	1.9	31
900	31	27	1.4	-4.4	37	1.9	31	27	1.4	-4.4	37	1.9	31	27	1.4	-4.4	37	1.9	31
850	31	27	1.4	-4.7	37	1.9	31	27	1.4	-4.7	37	1.9	31	27	1.4	-4.7	37	1.9	31
800	31	27	1.4	-5.0	37	1.9	31	27	1.4	-5.0	37	1.9	31	27	1.4	-5.0	37	1.9	31
750	31	27	1.4	-5.3	37	1.9	31	27	1.4	-5.3	37	1.9	31	27	1.4	-5.3	37	1.9	31
700	31	27	1.4	-5.6	37	1.9	31	27	1.4	-5.6	37	1.9	31	27	1.4	-5.6	37	1.9	31
650	31	27	1.4	-5.9	37	1.9	31	27	1.4	-5.9	37	1.9	31	27	1.4	-5.9	37	1.9	31
600	31	27	1.4	-6.2	37	1.9	31	27	1.4	-6.2	37	1.9	31	27	1.4	-6.2	37	1.9	31
550	31	27	1.4	-6.5	37	1.9	31	27	1.4	-6.5	37	1.9	31	27	1.4	-6.5	37	1.9	31
500	31	27	1.4	-6.8	37	1.9	31	27	1.4	-6.8	37	1.9	31	27	1.4	-6.8	37	1.9	31
450	31	27	1.4	-7.1	37	1.9	31	27	1.4	-7.1	37	1.9	31	27	1.4	-7.1	37	1.9	31
400	31	27	1.4	-7.4	37	1.9	31	27	1.4	-7.4	37	1.9	31	27	1.4	-7.4	37	1.9	31
350	31	27	1.4	-7.7	37	1.9	31	27	1.4	-7.7	37	1.9	31	27	1.4	-7.7	37	1.9	31
300	31	27	1.4	-8.0	37	1.9	31	27	1.4	-8.0	37	1.9	31	27	1.4	-8.0	37	1.9	31
250	31	27	1.4	-8.3	37	1.9	31	27	1.4	-8.3	37	1.9	31	27	1.4	-8.3	37	1.9	31
200	31	27	1.4	-8.6	37	1.9	31	27	1.4	-8.6	37	1.9	31	27	1.4	-8.6	37	1.9	31
150	31	27	1.4	-8.9	37	1.9	31	27	1.4	-8.9	37	1.9	31	27	1.4	-8.9	37	1.9	31
100	31	27	1.4	-9.2	37	1.9	31	27	1.4	-9.2	37	1.9	31	27	1.4	-9.2	37	1.9	31
50	31	27	1.4	-9.5	37	1.9	31	27	1.4	-9.5	37	1.9	31	27	1.4	-9.5	37	1.9	31
0	31	27	1.4	-9.8	37	1.9	31	27	1.4	-9.8	37	1.9	31	27	1.4	-9.8	37	1.9	31

MEMPHIS, TENN., 974 M										NASHVILLE, TENN., 1001 M									
Standard pressure surface mb.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Resultant Wind Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Resultant Wind Speed m.p.s.	No. of observations	Dynamic height meters	Temperature °C	Dew Point °C	Direction tens of deg	Resultant Wind Speed m.p.s.	No. of observations
570	31	11	16.4	16.8	05	2.4	31	11	16.4	16.8	05	2.4	31	11	16.4	16.8	05	2.4	31
1000	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31
950	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31
900	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31
850	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31
800	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31
750	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31
700	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31
650	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31
600	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31
550	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31
500	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31
450	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31
400	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31
350	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31
300	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31
250	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31
200	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31
150	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31
100	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31
50	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31
0	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31	16	16.8	16.8	05	2.4	31



## Average monthly values

DECEMBER 1980

HARBOR CITY, MO										ST CLON, MO										ST PAUL ISLAND, AK										SALEM, IL										SALEM, OR									
907 WS										908 WS										1010 MR										1001 MR										1012 MR									
900	26	1.04	-1.0	-7.7	7.7	31	985	-10.6	-14.7	7.1	1.9	31	10	-1.3	-5.4	0.4	9.2	31	174	.0	-3.6	28	1.7	31	61	4.7	3.5	18	1.9																				
1000	26	1.04	-1.0	-7.7	7.7	31	985	-10.6	-14.7	7.1	1.9	31	10	-1.3	-5.4	0.5	9.2	31	174	.0	-3.6	28	1.7	31	61	4.7	3.5	19	2.7																				
900	26	1.04	-1.0	-7.7	7.7	31	985	-10.6	-14.7	7.1	1.9	31	10	-1.3	-5.4	0.4	9.2	31	174	.0	-3.6	28	1.7	31	61	4.7	3.5	18	1.9																				
850	31	1.44	.7	-8.1	7.7	7.9	1.944	-6.6	-15.1	.9	6.4	31	1.363	-8.2	-16.1	1.07	10.7	31	1.880	.3	-9.8	28	6.8	31	1.026	6.8	1.22	8	6.6																				
980	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
750	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
700	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
600	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
500	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
400	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
300	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
200	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
100	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
0	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
900	26	1.04	-1.0	-7.7	7.7	31	985	-10.6	-14.7	7.1	1.9	31	10	-1.3	-5.4	0.4	9.2	31	174	.0	-3.6	28	1.7	31	61	4.7	3.5	18	1.9																				
850	31	1.44	.7	-8.1	7.7	7.9	1.944	-6.6	-15.1	.9	6.4	31	1.363	-8.2	-16.1	1.07	10.7	31	1.880	.3	-9.8	28	6.8	31	1.026	6.8	1.22	8	6.6																				
980	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
750	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
700	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
600	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
500	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
400	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
300	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
200	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
100	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
0	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
900	26	1.04	-1.0	-7.7	7.7	31	985	-10.6	-14.7	7.1	1.9	31	10	-1.3	-5.4	0.4	9.2	31	174	.0	-3.6	28	1.7	31	61	4.7	3.5	18	1.9																				
850	31	1.44	.7	-8.1	7.7	7.9	1.944	-6.6	-15.1	.9	6.4	31	1.363	-8.2	-16.1	1.07	10.7	31	1.880	.3	-9.8	28	6.8	31	1.026	6.8	1.22	8	6.6																				
980	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
750	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
700	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
600	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
500	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
400	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
300	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
200	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
100	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
0	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
900	26	1.04	-1.0	-7.7	7.7	31	985	-10.6	-14.7	7.1	1.9	31	10	-1.3	-5.4	0.4	9.2	31	174	.0	-3.6	28	1.7	31	61	4.7	3.5	18	1.9																				
850	31	1.44	.7	-8.1	7.7	7.9	1.944	-6.6	-15.1	.9	6.4	31	1.363	-8.2	-16.1	1.07	10.7	31	1.880	.3	-9.8	28	6.8	31	1.026	6.8	1.22	8	6.6																				
980	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
750	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
700	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
600	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
500	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
400	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
300	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
200	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
100	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5	-11.5	29	9.7	31	1.989	3.4	-7.8	24	11.6																				
0	31	1.973	-4	-9.3	31	10.2	1.922	-6.6	-16.7	2.9	9.3	31	1.932	-9.8	-18.4	0.7	9.2	31	1.966	-5																													



## Average monthly values

DECEMBER 1980

## Average monthly values

[illegible]

# SOLAR RADIATION INTENSITIES

Tabulated in langley's per minute on a surface normal to the direction of the sun.

Sun's zenith distance										Sun's zenith distance									
A.M.					P.M.					A.M.					P.M.				
78 7'	75 7'	70 7'	60 0'	*	60 0'	70 7'	75 7'	78 7'		78 7'	75 7'	70 7'	60 0'	*	60 0'	70 7'	75 7'	78 7'	
AIR MASS										AIR MASS									
3.34	2.67	2.01	1.34	*	1.34	2.01	2.67	3.34		4.64	3.71	2.78	1.86	*	1.86	2.78	3.71	4.64	
1	1.32	1.43	1.45	1.54	1.57	1.60	1.63	1.65	1.67	1.89	1.99	1.12	1.27	1.32	1.24	1.09	.97	.87	
2	1.32	1.37	1.45	1.54	1.60	1.68	1.75	1.82	1.87	.93	1.02	1.14	1.30	1.33	1.31	1.13	1.01	.92	
3	1.24	1.31	1.42	1.53	1.64	1.74	1.84	1.91	1.95	.93	1.03	1.14	1.30	1.32	1.23	1.04	.91	.88	
4	1.26	1.33	1.43	1.53	1.64	1.75	1.84	1.91	1.95	.90	1.01	1.14	1.28	1.29	1.20	1.04	.91	.85	
5	1.20	1.27	1.37	1.47	1.55	1.62	1.71	1.81	1.87	.91	1.02	1.12	1.29	1.29	1.24	1.01	.89	.86	
6	1.21	1.28	1.38	1.49	1.57	1.67	1.75	1.82	1.89	.91	1.02	1.12	1.29	1.29	1.24	1.01	.89	.86	
7	1.20	1.29	1.38	1.50	1.56	1.66	1.75	1.82	1.89	.87	1.02	1.13	1.29	1.33	1.20	1.09	.94	.86	
8	1.18	1.27	1.37	1.50	1.57	1.66	1.75	1.82	1.89	.93	1.02	1.13	1.30	1.33	1.31	1.16	1.05	.96	
9	1.19	1.28	1.37	1.49	1.58	1.66	1.75	1.82	1.89	1.05	1.15	1.27	1.40	1.40	1.21	1.02	.91	.85	
10	1.20	1.29	1.38	1.50	1.56	1.66	1.75	1.82	1.89	.88	.86	1.00	1.18	1.23	1.21	1.06	.94	.85	
11	1.18	1.27	1.37	1.49	1.57	1.66	1.75	1.82	1.89	.88	.98	1.12	1.25	1.33	1.29	1.12	1.01	.93	
12	1.22	1.30	1.39	1.51	1.58	1.66	1.75	1.82	1.89	1.00	1.09	1.20	1.33	1.38	1.33	1.18	1.09	1.00	
13	1.19	1.28	1.37	1.49	1.58	1.66	1.75	1.82	1.89	.98	1.07	1.18	1.33	1.35	1.31	1.15	1.03	.93	
14	1.20	1.32	1.42	1.52	1.61	1.52	1.41	1.32	1.24	.93	1.04	1.17	1.30	1.32	1.25	1.14	1.02	.91	
15	1.19	1.29	1.39	1.51	1.60	1.52	1.39	1.31	1.22	.91	.93	1.04	1.17	1.30	1.32	1.25	1.14	1.02	
16	1.18	1.27	1.37	1.49	1.57	1.67	1.75	1.82	1.89	.85	.96	1.08	1.25	1.30	1.20	1.10	.98	.86	
17	1.09	1.19	1.32	1.46	1.55	1.68	1.76	1.83	1.89	.87	.99	1.09	1.28	1.35	1.29	1.10	.98	.87	
18	1.21	1.29	1.39	1.51	1.59	1.52	1.39	1.32	1.23	.95	.95	1.06	1.26	1.29	1.23	1.07	.95	.86	
19	1.23	1.31	1.39	1.51	1.59	1.68	1.76	1.83	1.89	.93	1.04	1.17	1.30	1.35	1.31	1.13	1.01	.91	
20	1.15	1.23	1.33	1.45	1.52	1.65	1.72	1.79	1.85	.91	.93	1.04	1.17	1.30	1.35	1.31	1.13	1.01	
21	1.18	1.25	1.35	1.48	1.56	1.66	1.75	1.82	1.89	.85	.96	1.08	1.25	1.30	1.20	1.10	.98	.86	
22	1.19	1.26	1.36	1.48	1.56	1.66	1.75	1.82	1.89	.87	.99	1.09	1.28	1.35	1.29	1.10	.98	.87	
23	1.16	1.24	1.33	1.46	1.54	1.64	1.73	1.81	1.88	.93	1.02	1.15	1.31	1.35	1.31	1.13	1.01	.91	
24	1.16	1.24	1.33	1.46	1.54	1.64	1.73	1.81	1.88	.93	1.02	1.15	1.31	1.35	1.31	1.13	1.01	.91	
25	1.16	1.24	1.33	1.46	1.54	1.64	1.73	1.81	1.88	.93	1.02	1.15	1.31	1.35	1.31	1.13	1.01	.91	
26	1.16	1.24	1.33	1.46	1.54	1.64	1.73	1.81	1.88	.93	1.02	1.15	1.31	1.35	1.31	1.13	1.01	.91	
27	1.16	1.24	1.33	1.46	1.54	1.64	1.73	1.81	1.88	.93	1.02	1.15	1.31	1.35	1.31	1.13	1.01	.91	
28	1.16	1.24	1.33	1.46	1.54	1.64	1.73	1.81	1.88	.93	1.02	1.15	1.31	1.35	1.31	1.13	1.01	.91	
29	1.16	1.24	1.33	1.46	1.54	1.64	1.73	1.81	1.88	.93	1.02	1.15	1.31	1.35	1.31	1.13	1.01	.91	
30	1.16	1.24	1.33	1.46	1.54	1.64	1.73	1.81	1.88	.93	1.02	1.15	1.31	1.35	1.31	1.13	1.01	.91	
31	1.16	1.24	1.33	1.46	1.54	1.64	1.73	1.81	1.88	.93	1.02	1.15	1.31	1.35	1.31	1.13	1.01	.91	
Average	1.21	1.29	1.38	1.38	1.58	1.48	1.36	1.27	1.19	.91	1.01	1.14	1.28	1.31	1.27	1.11	.91	.91	

## NET RADIATION

Net radiation in langley's per day (8 a.m. to 8 a.m.) at Palmer, Alaska.

Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langley's	-3	-12	-26	-48	-81	-65	-54	-189	-335	+108	-47	-34	-40	-20	-27	-1	-23	-10	-6	-25	-14	-19	-13	-14	-14	-14	-133	-101	-62	-9	0	-50

## CORRECTIONS STORM SUMMARY

STATE	TORNADOES					HAILSTORMS					WINDSTORMS					LIGHTNING					HEAVY SNOWSTORMS AND BLIZZARDS					# ICE STORMS					ALL OTHER				
	NUMBER	DAYS	DEATHS	INJURIES	* DAMAGE	DEATHS	INJURIES	* DAMAGE	DEATHS	INJURIES	* DAMAGE	DEATHS	INJURIES	* DAMAGE	DEATHS	INJURIES	* DAMAGE	DEATHS	INJURIES	* DAMAGE	DEATHS	INJURIES	* DAMAGE	DEATHS	INJURIES	* DAMAGE	DEATHS	INJURIES	* DAMAGE						
																														PROP. LRTY	CROPS	PROP. LRTY	CROPS	PROP. LRTY	CROPS
April 1980																																			
California	1																																		
May 1980																																			
Minnesota																																			
Oct 1980																																			
Dec 1980	12																																		
December 1980																																			
Continued																																			



# REFERENCE NOTES

OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES: Dates in the table apply to the period 24 hours prior to time of observation. In some cases the actual occurrence is on the calendar date preceding that shown. (See individual Climatological Data for times of observations).

- + And also on an earlier date or dates.
- D Water equivalent of snowfall wholly or partly estimated, using a ratio of 1 inch of water equivalent to every 10 inches of snowfall.

CLIMATOLOGICAL DATA -- METRIC UNITS: Data from airport unless otherwise specified.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

- B Number of days maximum 21.1°C. or above for Alaskan Stations.
- Y Peak Gust.
- + And also on an earlier date or dates.
- U Indicates Urban site.
- R Indicates Rural site.
- Ø Station pressures apply to elevations shown in the "Elevations" table of the annual issue of this publication.

Conversion formulae to English Units are as follows:

1 foot = 0.3048 meters  
 °F. =  $\frac{9}{5} \times ^\circ\text{C} + 32$   
 1 inch = 25.4 millimeters  
 1 mile per hour = 0.447 meters per second

HEATING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

COOLING DEGREE DAYS: Data from airport unless otherwise specified.

- U Indicates Urban site.
- R Indicates Rural site.

STORM SUMMARY:

- o Includes crop damage.
- C Crop damage.
- \* No occurrence of storms or unusual weather phenomena reported.
- @ Includes heavy sleet storm.
- # Freezing drizzle and freezing rain, commonly known as glaze.
- Ø For breakdown of "All Others," and for detailed listing of other storms, see the Environmental Data and Information Service, NOAA, monthly publication STORM DATA.
- ± No Storm Data Report received for this State.
- ◇ Report Incomplete.
- † Storm damages are placed in categories varying from 1 to 9 as follows:
  - 1 Less than \$50
  - 2 \$50 to \$500
  - 3 \$500 to \$5,000
  - 4 \$5,000 to \$50,000
  - 5 \$50,000 to \$500,000
  - 6 \$500,000 to \$5 Million
  - 7 \$5 Million to \$50 Million
  - 8 \$50 Million to \$500 Million
  - 9 \$500 Million to \$5 Billion

RAWINSONDE DATA (Average Monthly Values):

All observations scheduled at 1200, G.C.T. Pressures shown under station names are the average monthly station pressures for the month of record, corrected to the height of the floors of the instrument shelters used for rawinsonde purposes. "Number of observations" refers to those of dynamic height only. Although the number of temperature observations at any given pressure surface is usually the same as for height, it is possible for temperature to be missing for one or more pressure surfaces of some observations. Dew Point averages are limited to those observations with temperatures warmer than -40°C. Observations of wind speed and direction are sometimes lost due to limiting angles, i.e., elevation angles less than 6° above the horizon, or any obstruction above the horizon. The temperature and wind values are based on 15 or more observations at the surface or 5 observations at a standard pressure level for temperature and 10 for wind. Dew Point data are not published for standard pressure surfaces for which less than 5 observations are available. Dew Point data are computed and expressed on the basis of vapor pressure over water. Unless otherwise indicated, they are obtained from carbon hygrometers. These average values for standard pressure surfaces were obtained by rawinsondes; dynamic height (geopotential) in units of .98 dynamic meter, temperature and dew point in degrees Celsius, and resultant winds in tens of degrees and meters per second.

- \* Rawinsondes at this station were equipped with hypsometers to permit more accurate evaluations of pressure, and consequently height, at pressures lower than 50 mb. These rawinsondes were carried aloft by special high altitude balloons, in an effort to consistently reach higher altitudes.
- + Observations for these stations are scheduled at 0000 G.C.T.
- † Dew Point temperatures are based on a minimum of 5 observations. Therefore, due to the lesser number of Dew Point observations at the higher levels comparison with dry-bulb temperatures should be made with care. Dew Point temperatures replaced Relative Humidity January 1967.

SOLAR RADIATION INTENSITIES: Langley is the unit used to denote one gram calorie per square centimeter. An explanation of the formula used in computing the air mass values for each station appears in the February 1957 issue, Vol. 8, No. 2, page 63, of this publication.

( ) Clouds Present	DM Moderate Dust	HM Moderate Haze	KS Slight Smoke
* Values corresponding to true solar noon	DS Slight Dust	HS Slight Haze	M Moderate Haze-indeter-
BD Blowing Dust	F Fog	I Intense Haze-indeterminable	minable
BN Blowing Sand	GF Ground Fog	K Smoke	N Sand
D Dust	H Haze	KI Intense Smoke	S Slight Haze-indeter-
DI Intense Dust	HI Intense Haze	KM Moderate Smoke	minable

NET RADIATION: The measurement is made with a CSIRO FUNK net exchange radiometer over a plot of sod. The value represents the total incoming minus the total outgoing radiation of all wave lengths.

These data are of an experimental nature and are published as received from the Palmer Exp. Station. The instrument with which they were measured has not been checked by the NOAA, National Weather Service.

Chart 1. A. Normal Daily Average Temperature (°F. 1941-70), December.

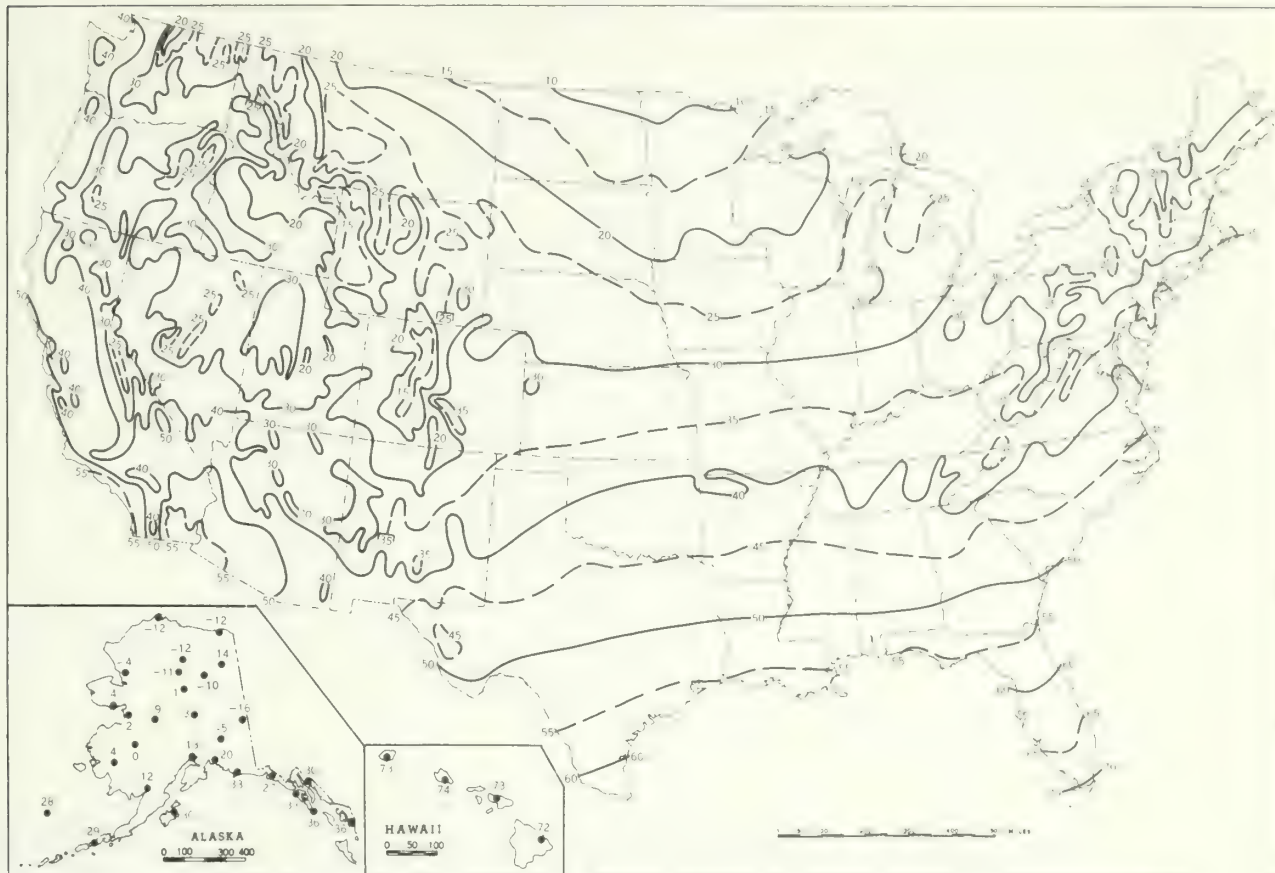
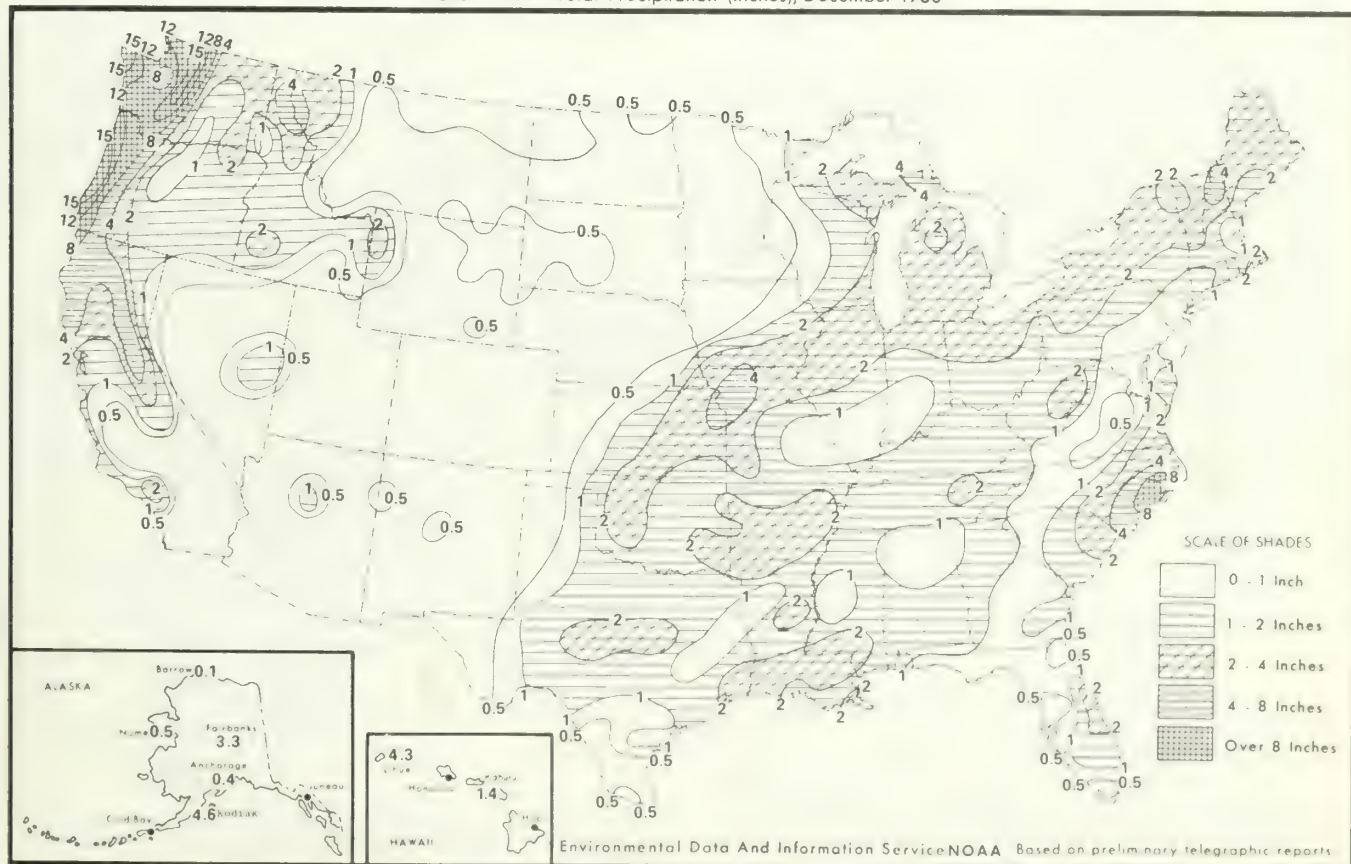
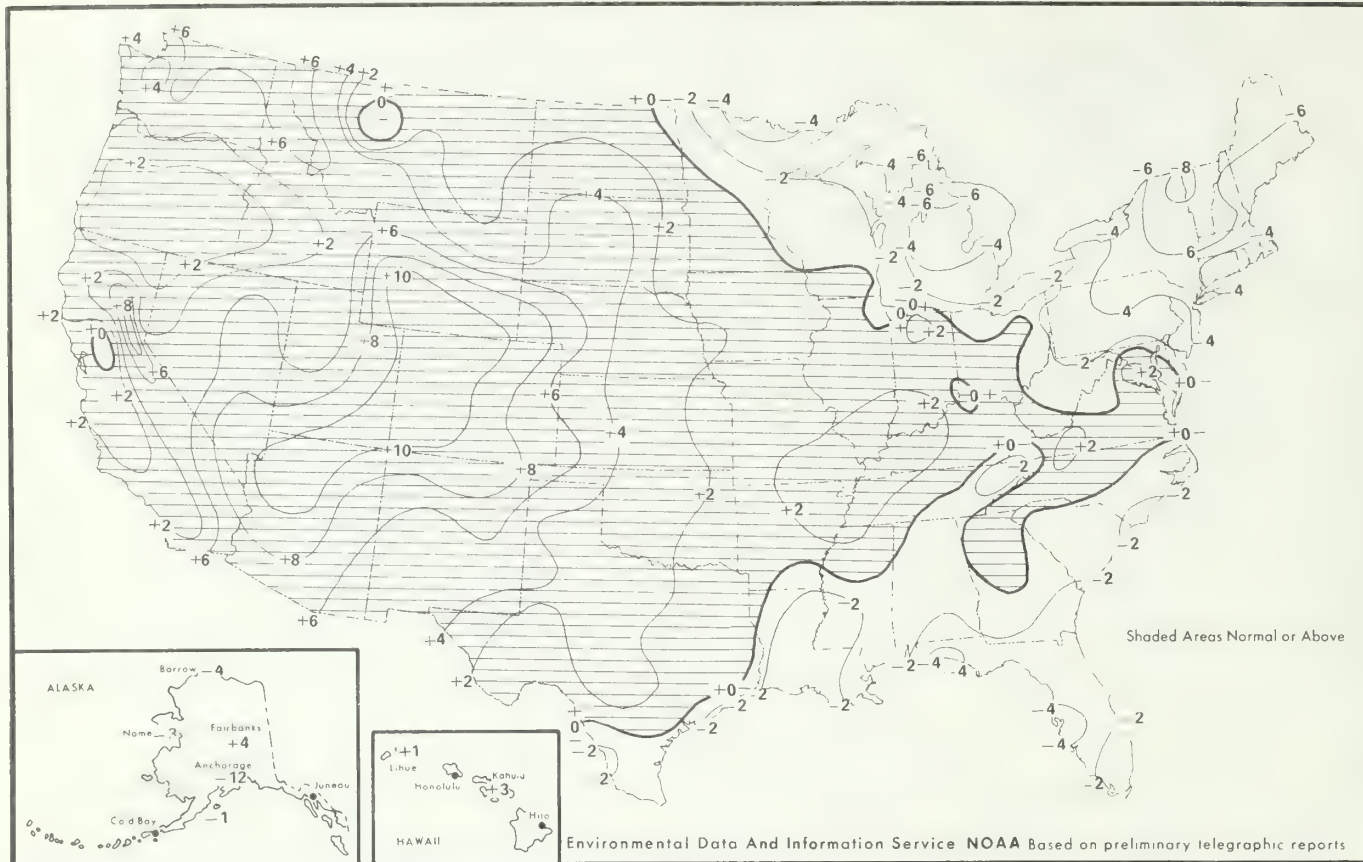


Chart II A. Total Precipitation (Inches), December 1980





B. Temperature Departure from 30 - Year Mean (°F 1941-70), December 1980



B. Percentage of Normal Precipitation, December 1980

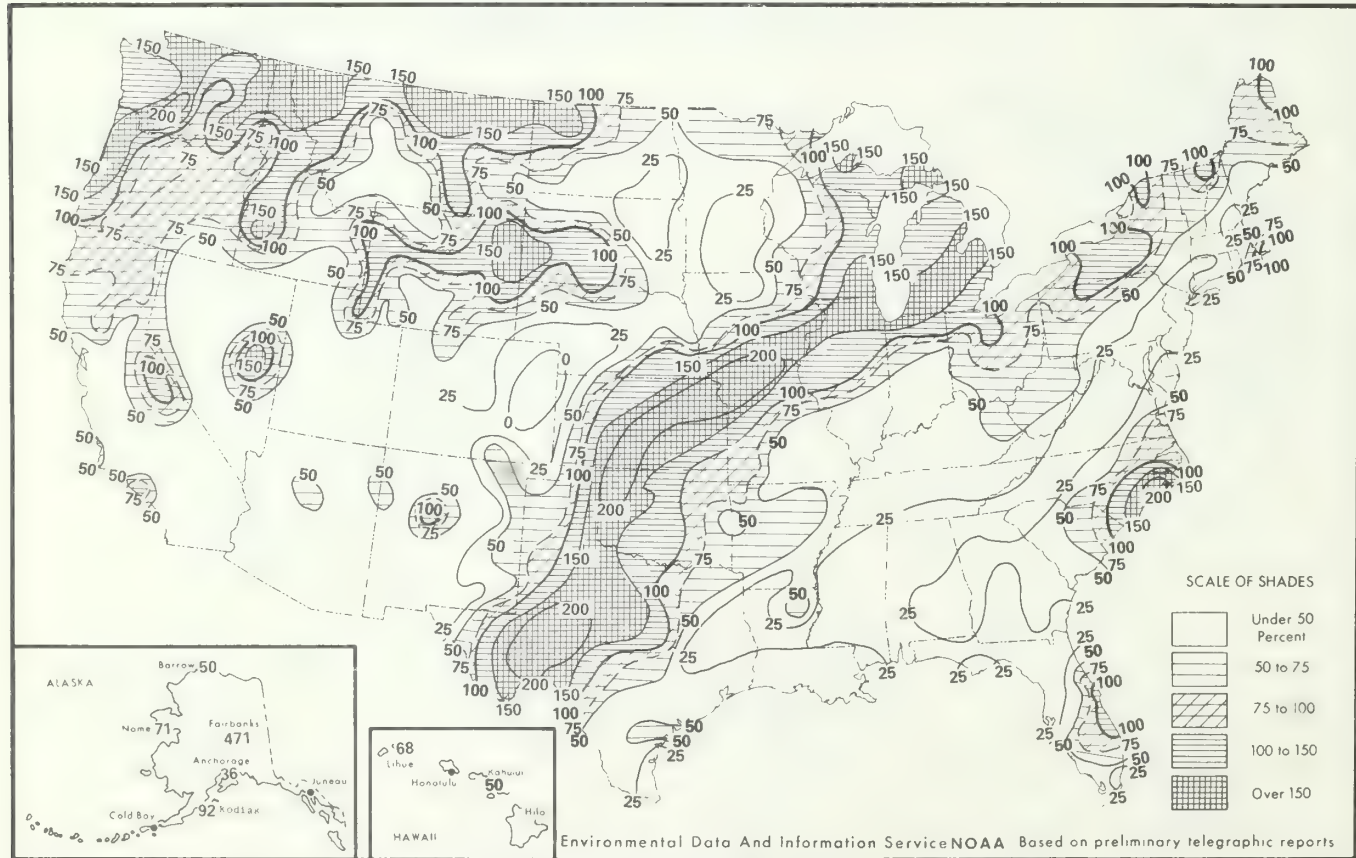
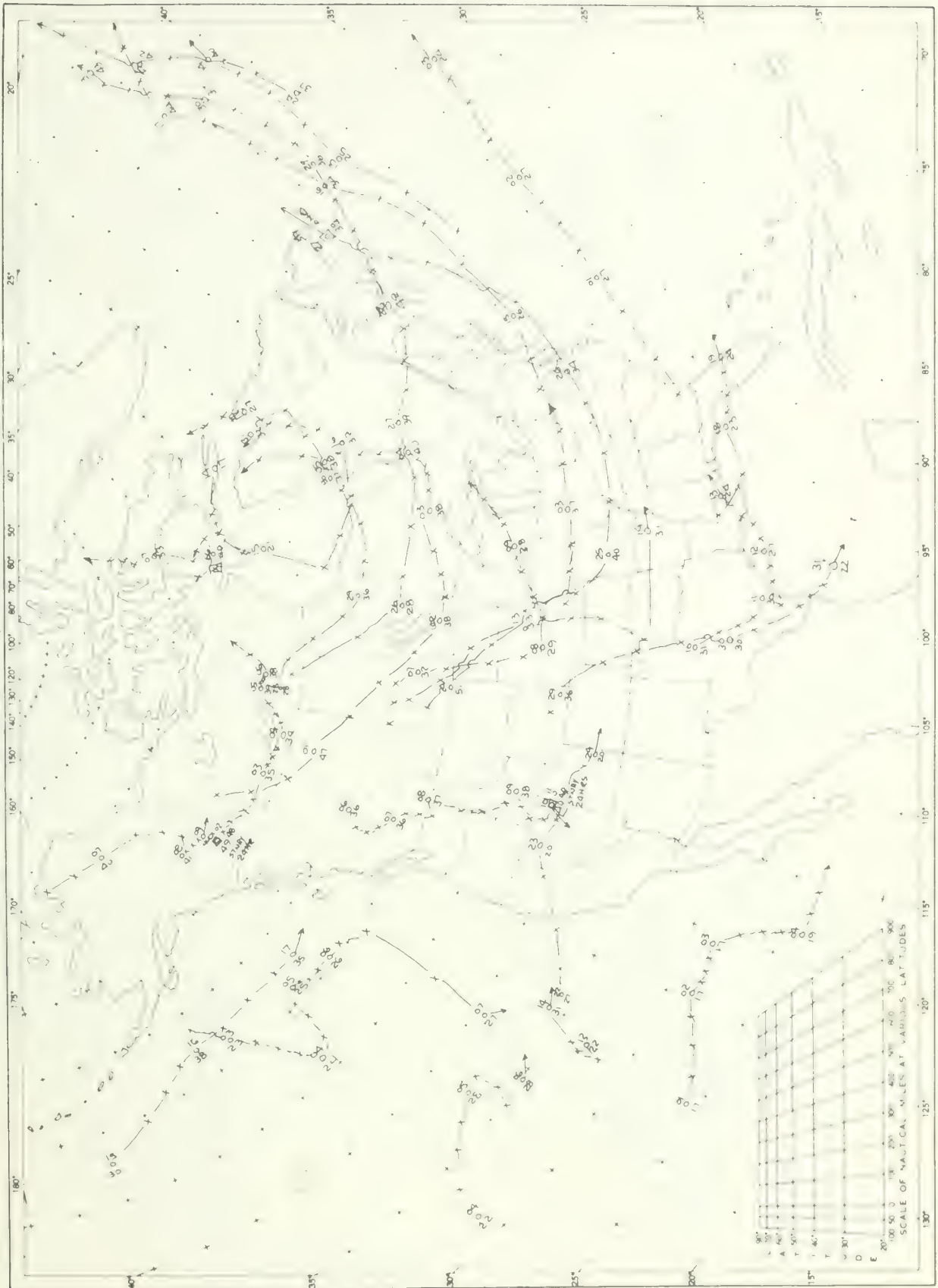


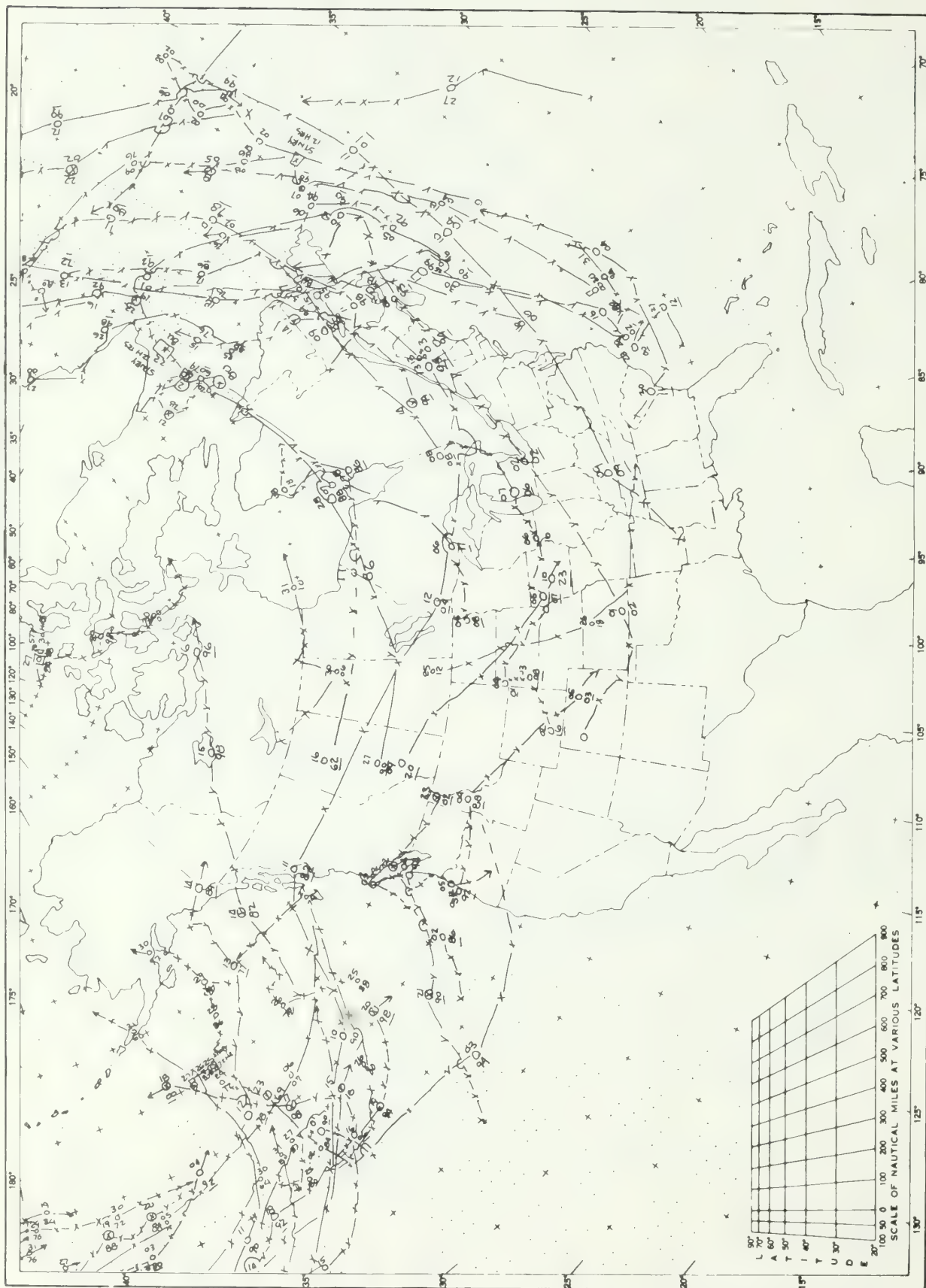


Chart III Tracks of Anticyclones at Sea Level, December 1980



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
 X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.

Chart IV. Tracks of Centers of Cyclones at Sea Level, December 1980



Circle indicates position of center at 7:00 a.m. E.S.T. Figure above circle indicates date, figure below, pressure to nearest millibar.  
 X's indicate intervening 6-hourly positions. Squares indicate position of stationary center for period shown. Dashed line in track indicates reformation at new position. Only those centers which could be identified for 24 hours or more are included.





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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY



"I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AND IS COMPILED FROM INFORMATION RECEIVED AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA 28801."

*Samuel B. Mitchell*

DIRECTOR  
NATIONAL CLIMATIC CENTER

Dear Subscriber:

This is the last issue of the Climatological Data National Summary to be published by the National Climatic Center (NCC). Budget reductions necessitate its termination. This bulletin has served to summarize climatological information also available in the following publications:

1. Local Climatological Data (LCD) - available from the National Climatic Center (NCC).
2. Climatological Data (CD) - available from NCC.
3. Monthly Climatic Data for the World (MCDW) - available from NCC.
4. Storm Data - available from NCC.
5. Mariners Weather Log (MWL) - available from the National Oceanographic Data Center, EDIS, NOAA, Washington, DC 20235.
6. Weatherwise - available from Heldref Publications, 4000 Albermarle Street, NW, Washington, DC 20016.
7. Weekly Weather and Crop Bulletin (WWCB) - available from the NOAA/USDA Joint Agricultural Weather Facility, USDA South Building, Room 3526, Washington, DC 20250.
8. Monthly Weather Review (MWR) - available from the American Meteorological Society, 45 Beacon Street, Boston, MA 20108.

To assist you in locating CDNS data in the future, the following is a list of monthly and annual CDNS tables with the corresponding publication that contains similar information:

#### MONTHLY CDNS TABLES

General Summary of Weather Conditions - These summaries are published in the Weekly Weather and Crop Bulletin the following month. Monthly summaries are also carried in the Monthly Weather Review and Weatherwise.

Hurricanes and Tropical Storms - These will be published in Storm Data as they are received.

Observed Extremes of Temperature and Precipitation - These data are published by State in the CD bulletin.

Degree Days - Heating, Cooling and Seasonal - These data are published in the LCD's and CD's.

Storm Summary - This table will be published in Storm Data.



Rawinsonde Data - These data are available on request from NCC in the form of WBAN-33. Selected stations are also published in the MCDW.

Solar Radiation Intensities and Net Radiation - The data will be available from the Center in their original manuscript form.

Normal Daily Average Temperature Chart - This chart will no longer be available.

Total Precipitation Chart - This chart is published in the WWCB.

Tracks of anticyclones and cyclones - These tracks are received from the National Weather Service Surface Analysis Sections, Washington, DC. Principal tracks of centers of cyclones are published in issues of MWL.

#### ANNUAL CDNS TABLES

General Summary of Weather Conditions - The first bimonthly issue of Weatherwise carries an annual summary for the previous year.

Maximum Short Duration Precipitation - The tables are being considered for publication in the LCD. They are not published elsewhere at this time.

Sunshine, Amount and Percentages - These data are available in the LCD.

Annual Climatological Data - These data are published in English units only in the monthly and annual LCD.

Normals, Means, and Extremes - These data are published in the LCD.

General Summary of Tornadoes and Lightning - These summaries are to be published in the December issue of Storm Data.

Hailstorm and Wind Losses - These data are to be published in the December issue of Storm Data.

Atlantic and Pacific Tropical Cyclone Narratives and Tracks - These are published in MWL.

Annual Temperature and Precipitation Departure Charts - These charts are not published elsewhere.

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# CLIMATOLOGICAL DATA

## NATIONAL SUMMARY

YEAR 1980

### GENERAL SUMMARY OF WEATHER CONDITIONS

Lewis A. Blodgett, Meteorological Advisor, NCC

This year January brought above normal temperatures over most of the nation, in sharp contrast to the previous three Januaries, except the Pacific Northwest and upper Rockies where the month averaged up to 6° colder than normal. Precipitation was above normal for much of the country, especially in the West. Flagstaff, AZ, tallied a record 6.52 inches. A band of less than 50% normal precipitation extended from New England southwestward to Arkansas. It was Boston's driest January with 0.74 inches. Very little snow fell in the Northeast, raising fears about the adequacy of snowcover for the Winter Olympics.

The mild winter continued in the West along with excessive precipitation in February. Torrential rains fell repeatedly in California causing flooding. Cold weather was the rule east of the Dakotas southward to western Texas. A large part of the Ohio Valley averaged 8° or more below normal. However, at mid-month for a week the entire country was warm. The dry weather continued in the East, and due to the cold temperatures much of the precipitation that did occur fell as snow. For example, Norfolk, VA, had 18.9 inches of snow, a monthly record, although its monthly precipitation was below normal.

The end of February was marked by a strong cold Arctic airmass plunging into the Southeast, causing the lowest March temperatures on record for a number of southeastern stations. Heavy snow developed in eastern North Carolina and Virginia, with Norfolk, VA, experiencing a record 24-hour snow amount for March. Snow records were set in Norfolk for both monthly and 24-hour amounts for both February and March.

March turned very wet in the Southeast, as well as in the Southwest. Charlotte, NC, Augusta, GA, and Newark, NJ, experienced record precipitation amounts for March, recording 8.76, 11.92 and 9.13 inches, respectively. The month was generally colder than normal in the eastern half of the country, except the Gulf Coast, Florida, the Appalachians, and New England. The northwestern quadrant was a bit warmer than usual.

April started cold with snow in Kansas, Arkansas, and Missouri, but the third week was marked by unprecedented heat. Temperatures reached 100° in Fargo, ND, on the 21st, and upper 90's throughout the Northern Plains set numerous April records. Overall, the month was quite warm in the West, Northern Plains, and Northeast, while the South was cooler than normal. The Northern Plains was also quite dry (Fargo had only 0.02 inches), while rainfall was adequate in most of the rest of the country, and excessive along the Gulf Coast. Baton Rouge, LA, had 14.84 inches, for its wettest April.

The warm dry weather continued in the Northern Plains during May. However, record precipitation occurred to the west. Missoula, MT, and Helena, MT, recorded 7.38 and 4.32 inches respectively, for their wettest May. Near the Gulf Coast, Lake Charles, LA, recorded 20.71, for its wettest May since 1907. The Northeast and Southwest were rather dry. Below normal temperatures were confined to the Southwest and a portion of the Southeast.

The summer of 1980 will be long remembered for heat and drought. During June, a ridge gradually built up over the Southern and Central Plains, becoming firmly established aloft to shut out precipitation and increase the heat. In Texas, Wichita Falls reached 117° on the 28th, and Dallas 113° on the 26th and 27th, all-time records. The heat did not extend to the Northeast and Great Lakes region, or the Northwest, which averaged up to 4° below normal. In fact, Binghamton, NY, recorded 33° on the 9th, and Burns, OR, recorded 23° on the 3d, new June low records. But the dry weather was widespread, with only the Northwest and patchy areas in the East reporting above normal precipitation.

The heat intensified in July, with practically the entire country experiencing above normal temperatures, except a part of the Northwest and eastern Maine. The heat anomaly was centered over Kansas and Missouri with a 10° monthly departure from normal. From Arizona eastward across the South and Midwest numerous



# GENERAL SUMMARY OF WEATHER CONDITIONS

YEAR 1980

stations recorded their hottest July and/or highest daily temperature. Drought accompanied the heat, with only small areas in the West, northern Appalachians, and Maine recording normal or above precipitation.

The heat and drought spread eastward during August with record or near-record high mean August temperatures. New York City recorded its hottest August in 110 years of record, with an 80.3° average. However, the cooler-than-normal area in the Northwest expanded across the Northern Plains, with some areas in Montana averaging up to 6° below normal. While much of the South and East remained dry, rainfall set records in the Northern Plains and Great Lakes area. Madison, WI, recorded 9.49 inches, and Indianapolis, IN, recorded 8.34 inches, for their wettest August. Thanks to Hurricane Allen, southern Texas also had excessive rainfall. Corpus Christi's 14.79 was an August record.

The hot weather continued over most of the nation during September, and it was not until the last week that a cooler air mass moved slowly to the Southeast, ending the hottest summer in many years. Considerable rainfall developed in the Southeast with the movement of this front. Coupled with heavy rains earlier in the month in Texas from tropical storms, the drought eased. However, rainfall was scanty in the upper Plains and in much of the mid-and Northeast, as well as in Florida.

The abrupt switch to cooler weather near the end of September continued during October, resulting in most of the country experiencing monthly temperatures averaging up to 8° below normal. Only the western third managed to stay slightly warmer than normal, due to record high readings early in the month. The northern Plains

and Rockies, as well as the eastern Gulf Coast and mid-Atlantic, were wet. Rapid City, SD, observed 2.28 inches, to set a record for the month. Some midwestern stations reported record October snowfall. Rainfall was scanty in the Southwest, the Great Lakes, parts of the Southeast, and Florida.

November was marked by warm temperatures everywhere except for the Northeast, and the central South. Record high daily November temperatures were experienced, such as 92° at Abilene, TX, and 85° at Topeka, KS, on the 8th. But later in the month this same area had a noteworthy snowstorm. The month was rather dry for most of the country, with a notable exception in western Texas and eastern New Mexico, as well as southern Florida, where Hurricane Jeane dumped 23.28 inches on Key West in a 24-hour period on the 11th-12th, an all-time record.

The West experienced record high temperatures in December. Phoenix, AZ; Casper, WY; and Scottsbluff, NE experienced their warmest December with monthly anomalies up to 10°. Only the Great Lakes area, the Northeast, and parts of the Southeast had a colder than normal December. This was largely caused by a bitterly cold, windy outbreak of Arctic air on Christmas. Record low minimum and low maximum temperatures at many eastern stations were observed. At the same time record highs were occurring in the West. It was a generally dry month, but a narrow strip of above normal precipitation ran northeastward from western Texas to Michigan, and parts of the Northwest were also wet. At Jackson, MS, the 0.91 monthly total made December the driest on record. Sault Ste. Marie, MI, recorded its largest monthly total ever, 69.3 inches.

# MAXIMUM SHORT DURATION PRECIPITATION

YEAR 1980

Maximum precipitation in inches (in 100 minutes)												
	5	10	15	20	30	45	60	90	120	150	180	240
ALABAMA												
100	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5
110	1.1	1.6	2.1	2.6	3.1	3.6	4.1	4.6	5.1	5.6	6.1	6.6
120	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	6.7
130	1.3	1.8	2.3	2.8	3.3	3.8	4.3	4.8	5.3	5.8	6.3	6.8
140	1.4	1.9	2.4	2.9	3.4	3.9	4.4	4.9	5.4	5.9	6.4	6.9
150	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0
160	1.6	2.1	2.6	3.1	3.6	4.1	4.6	5.1	5.6	6.1	6.6	7.1
170	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	6.7	7.2
180	1.8	2.3	2.8	3.3	3.8	4.3	4.8	5.3	5.8	6.3	6.8	7.3
190	1.9	2.4	2.9	3.4	3.9	4.4	4.9	5.4	5.9	6.4	6.9	7.4
200	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5
210	2.1	2.6	3.1	3.6	4.1	4.6	5.1	5.6	6.1	6.6	7.1	7.6
220	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	6.7	7.2	7.7
230	2.3	2.8	3.3	3.8	4.3	4.8	5.3	5.8	6.3	6.8	7.3	7.8
240	2.4	2.9	3.4	3.9	4.4	4.9	5.4	5.9	6.4	6.9	7.4	7.9
250	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0
260	2.6	3.1	3.6	4.1	4.6	5.1	5.6	6.1	6.6	7.1	7.6	8.1
270	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	6.7	7.2	7.7	8.2
280	2.8	3.3	3.8	4.3	4.8	5.3	5.8	6.3	6.8	7.3	7.8	8.3
290	2.9	3.4	3.9	4.4	4.9	5.4	5.9	6.4	6.9	7.4	7.9	8.4
300	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5
310	3.1	3.6	4.1	4.6	5.1	5.6	6.1	6.6	7.1	7.6	8.1	8.6
320	3.2	3.7	4.2	4.7	5.2	5.7	6.2	6.7	7.2	7.7	8.2	8.7
330	3.3	3.8	4.3	4.8	5.3	5.8	6.3	6.8	7.3	7.8	8.3	8.8
340	3.4	3.9	4.4	4.9	5.4	5.9	6.4	6.9	7.4	7.9	8.4	8.9
350	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0
360	3.6	4.1	4.6	5.1	5.6	6.1	6.6	7.1	7.6	8.1	8.6	9.1
370	3.7	4.2	4.7	5.2	5.7	6.2	6.7	7.2	7.7	8.2	8.7	9.2
380	3.8	4.3	4.8	5.3	5.8	6.3	6.8	7.3	7.8	8.3	8.8	9.3
390	3.9	4.4	4.9	5.4	5.9	6.4	6.9	7.4	7.9	8.4	8.9	9.4
400	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5
410	4.1	4.6	5.1	5.6	6.1	6.6	7.1	7.6	8.1	8.6	9.1	9.6
420	4.2	4.7	5.2	5.7	6.2	6.7	7.2	7.7	8.2	8.7	9.2	9.7
430	4.3	4.8	5.3	5.8	6.3	6.8	7.3	7.8	8.3	8.8	9.3	9.8
440	4.4	4.9	5.4	5.9	6.4	6.9	7.4	7.9	8.4	8.9	9.4	9.9
450	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0
460	4.6	5.1	5.6	6.1	6.6	7.1	7.6	8.1	8.6	9.1	9.6	10.1
470	4.7	5.2	5.7	6.2	6.7	7.2	7.7	8.2	8.7	9.2	9.7	10.2
480	4.8	5.3	5.8	6.3	6.8	7.3	7.8	8.3	8.8	9.3	9.8	10.3
490	4.9	5.4	5.9	6.4	6.9	7.4	7.9	8.4	8.9	9.4	9.9	10.4
500	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5
510	5.1	5.6	6.1	6.6	7.1	7.6	8.1	8.6	9.1	9.6	10.1	10.6
520	5.2	5.7	6.2	6.7	7.2	7.7	8.2	8.7	9.2	9.7	10.2	10.7
530	5.3	5.8	6.3	6.8	7.3	7.8	8.3	8.8	9.3	9.8	10.3	10.8
540	5.4	5.9	6.4	6.9	7.4	7.9	8.4	8.9	9.4	9.9	10.4	10.9
550	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0
560	5.6	6.1	6.6	7.1	7.6	8.1	8.6	9.1	9.6	10.1	10.6	11.1
570	5.7	6.2	6.7	7.2	7.7	8.2	8.7	9.2	9.7	10.2	10.7	11.2
580	5.8	6.3	6.8	7.3	7.8	8.3	8.8	9.3	9.8	10.3	10.8	11.3
590	5.9	6.4	6.9	7.4	7.9	8.4	8.9	9.4	9.9	10.4	10.9	11.4
600	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5
610	6.1	6.6	7.1	7.6	8.1	8.6	9.1	9.6	10.1	10.6	11.1	11.6
620	6.2	6.7	7.2	7.7	8.2	8.7	9.2	9.7	10.2	10.7	11.2	11.7
630	6.3	6.8	7.3	7.8	8.3	8.8	9.3	9.8	10.3	10.8	11.3	11.8
640	6.4	6.9	7.4	7.9	8.4	8.9	9.4	9.9	10.4	10.9	11.4	11.9
650	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0
660	6.6	7.1	7.6	8.1	8.6	9.1	9.6	10.1	10.6	11.1	11.6	12.1
670	6.7	7.2	7.7	8.2	8.7	9.2	9.7	10.2	10.7	11.2	11.7	12.2
680	6.8	7.3	7.8	8.3	8.8	9.3	9.8	10.3	10.8	11.3	11.8	12.3
690	6.9	7.4	7.9	8.4	8.9	9.4	9.9	10.4	10.9	11.4	11.9	12.4
700	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5
710	7.1	7.6	8.1	8.6	9.1	9.6	10.1	10.6	11.1	11.6	12.1	12.6
720	7.2	7.7	8.2	8.7	9.2	9.7	10.2	10.7	11.2	11.7	12.2	12.7
730	7.3	7.8	8.3	8.8	9.3	9.8	10.3	10.8	11.3	11.8	12.3	12.8
740	7.4	7.9	8.4	8.9	9.4	9.9	10.4	10.9	11.4	11.9	12.4	12.9
750	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0
760	7.6	8.1	8.6	9.1	9.6	10.1	10.6	11.1	11.6	12.1	12.6	13.1
770	7.7	8.2	8.7	9.2	9.7	10.2	10.7	11.2	11.7	12.2	12.7	13.2
780	7.8	8.3	8.8	9.3	9.8	10.3	10.8	11.3	11.8	12.3	12.8	13.3
790	7.9	8.4	8.9	9.4	9.9	10.4	10.9	11.4	11.9	12.4	12.9	13.4
800	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5
810	8.1	8.6	9.1	9.6	10.1	10.6	11.1	11.6	12.1	12.6	13.1	13.6
820	8.2	8.7	9.2	9.7	10.2	10.7	11.2	11.7	12.2	12.7	13.2	13.7
830	8.3	8.8	9.3	9.8	10.3	10.8	11.3	11.8	12.3	12.8	13.3	13.8
840	8.4	8.9	9.4	9.9	10.4	10.9	11.4	11.9	12.4	12.9	13.4	13.9
850	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0
860	8.6	9.1	9.6	10.1	10.6	11.1	11.6	12.1	12.6	13.1	13.6	14.1
870	8.7	9.2	9.7	10.2	10.7	11.2	11.7	12.2	12.7	13.2	13.7	14.2
880	8.8	9.3	9.8	10.3	10.8	11.3	11.8	12.3	12.8	13.3	13.8	14.3
890	8.9	9.4	9.9	10.4	10.9	11.4	11.9	12.4	12.9	13.4	13.9	14.4
900	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5
910	9.1	9.6	10.1	10.6	11.1	11.6	12.1	12.6	13.1	13.6	14.1	14.6
920	9.2	9.7	10.2	10.7	11.2	11.7	12.2	12.7	13.2	13.7	14.2	14.7
930	9.3	9.8	10.3	10.8	11.3	11.8	12.3	12.8	13.3	13.8	14.3	14.8
940	9.4	9.9	10.4	10.9	11.4	11.9	12.4	12.9	13.4	13.9	14.4	14.9
950	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0
960	9.6	10.1	10.6	11.1	11.6	12.1	12.6	13.1	13.6	14.1	14.6	15.1
970	9.7	10.2	10.7	11.2	11.7	12.2	12.7	13.2	13.7	14.2	14.7	15.2
980	9.8	10.3	10.8	11.3	11.8	12.3	12.8	13.3	13.8	14.3	14.8	15.3
990	9.9	10.4	10.9	11.4	11.9	12.4	12.9	13.4	13.9	14.4	14.9	15.4
1000	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5

Maximum precipitation in inches (in 100 minutes)												
	5	10	15	20	30	45	60	90	120	150	180	240
ALABAMA												
1000	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5
1100	1.1	1.6	2.1	2.6	3.1	3.6	4.1	4.6	5.1	5.6	6.1	6.6
1200	1.2	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	6.7
1300	1.3	1.8	2.3	2.8	3.3	3.8	4.3	4.8	5.3	5.8	6.3	6.8
1400	1.4	1.9	2.4	2.9	3.4	3.9	4.4	4.9	5.4	5.9	6.4	6.9
1500	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0
1600	1.6	2.1	2.6	3.1	3.6	4.1	4.6	5.1	5.6	6.1	6.6	7.1
1700	1.7	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	6.7	7.2
1800	1.8	2.3	2.8	3.3	3.8	4.3	4.8	5.3	5.8	6.3	6.8	7.3
1900	1.9	2.4	2.9	3.4	3.9	4.4	4.9	5.4	5.9	6.4	6.9	7.4
2000	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5
2100	2.1	2.6	3.1	3.6	4.1	4.6	5.1	5.6	6.1	6.6	7.1	7.6
2200	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	6.7	7.2	7.7
2300	2.3	2.8	3.3	3.8	4.3	4.8	5.3	5.8	6.3	6.8	7.3	7.8
2400	2.4	2.9	3.4	3.9	4.4	4.9	5.4	5.9	6.4	6.9	7.4	7.9
2500	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0
2600	2.6	3.1	3.6	4.1	4.6	5.1	5.6	6.1	6.6	7.1	7.6	8.1
2700	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	6.7	7.2	7.7	8.2
2800	2.8	3.3	3.8	4.3	4.8	5.3	5.8	6.3	6.8	7.3	7.8	8.3
2900	2.9	3.4	3.9	4.4	4.9	5.4	5.9	6.4	6.9	7.4	7.9	8.4
3000	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5
3100	3.1	3.6	4.1	4.6	5.1	5.6	6.1	6.6	7.1	7.6	8.1	8.6
3200	3.2	3.7	4.2	4.7	5.2	5.7	6.2	6.7	7.2	7.7	8.2	8.7
3300	3.3	3.8	4.3	4.8	5.3	5.8	6.3	6.8	7.3	7.8	8.3	8.8
3400	3.4	3.9	4.4	4.9	5.4	5.9	6.4	6.9	7.4	7.9	8.4	8.9
3500	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0
3600	3.6	4.1	4.6	5.1	5.6	6.1	6.6	7.1	7.6	8.1	8.6	9.1
3700	3.7	4.2	4.7	5.2	5.7	6.2	6.7	7.2	7.7	8.2	8.7	9.2
3800	3.8	4.3	4.8	5.3	5.8	6.3	6.8	7.3	7.8	8.3	8.8	9.3
3900	3.9	4.4	4.9	5.4	5.9	6.4	6.9	7.4	7.9	8.4	8.9	9.4
4000	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5
4100	4.1	4.6	5.1	5.6	6.1	6.6	7.1	7.6	8.1	8.6	9.1	9.6
4200	4.2	4.7	5.2	5.7	6.2	6.7	7.2	7.7	8.2	8.7	9.2	9.7
4300	4.3	4.8	5.3	5.8	6.3	6.8	7.3	7.8	8.3	8.8	9.3	9.8
4400	4.4	4.9	5.4	5.9	6.4	6.9	7.4	7.9	8.4	8.9	9.4	9.9
4500	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0
4600	4.6	5.1	5.6	6.1	6.6	7.1	7.6	8.1	8.6	9.1	9.6	10.1
4700	4.7	5.2	5.7	6.2	6.7	7.2	7.7	8.2	8.7	9.2	9.7	10.2
4800	4.8	5.3	5.8	6.3	6.8	7.3	7.8	8.3	8.8	9.3	9.8	10.3
4900	4.9	5.4	5.9	6.4	6.9	7.4	7.9	8.4	8.9	9.4	9.9	10.4
5000	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5
5100	5.1	5.6	6.1	6.6	7.1	7.6	8.1	8.6	9.1	9.6	10.1	10.6
5200	5.2	5.7	6.2	6.7	7.2	7.7	8.2	8.7	9.2	9.7	10.2	10.7
5300	5.3	5.8	6.3	6.8	7.3	7.8	8.3	8.8	9.3	9.8	10.3	10.8
5400	5.4	5.9	6.4	6.9	7.4	7.9	8.4	8.9	9.4	9.9	10.4	10.9
5500	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0
5600	5.6	6.1	6.6	7.1	7.6	8.1	8.6	9.1	9.6	10.1	10.6	11.1
5700	5.7	6.2	6.7	7.2	7.7	8.2	8.7	9.2	9.7	10.2	10.7	11.2
5800	5.8	6.3	6.8	7.3	7.8	8.3	8.8	9.3	9.8	10.3	10.8	11.3
5900	5.9	6.4	6.9	7.4	7.9	8.4	8.9	9.4	9.9	10.4	10.9	11.4
6000	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5
6100	6.1	6.6	7.1	7.6	8.1	8.6	9.1	9.6	10.1	10.6	11.1	11.6
6200	6.2	6.7	7.2	7.7	8.2	8.7	9.2	9.7	10.2	10.7	11.2	11.7
6300	6.3	6.8	7.3	7.8	8.3	8.8	9.3	9.8	10.3	10.8	11.3	11.8
6400	6.4	6.9	7.4	7.9	8.4	8.9	9.4	9.9	10.4	10.9	11.4	11.9
6500	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0
6600	6.6	7.1	7.6	8.1	8.6	9.1	9.6	10.1	10.6	11.1	11.6	12.1
6700	6.7	7.2	7.7	8.2	8.7	9.2	9.7	10.2	10.7	11.2	11.7	12.2
6800	6.8	7.3	7.8	8.3	8.8	9.3	9.8	10.3	10.8	11.3	11.8	12.3
6900	6.9	7.4	7.9	8.4	8.9	9.4	9.9	10.4	10.9	11.4	11.9	12.4
7000	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5
7100	7.1	7.6	8.1	8.6	9.1	9.6	10.1	10.6	11.1	11.6	12.1	12.6
7200	7.2	7.7	8.2	8.7	9.2	9.7	10.2	10.7	11.2	11.7	12.2	12.7
7300	7.3	7.8	8.3	8.8	9.3	9.8	10.3	10.8	11.3	11.8	12.3	12.8
7400	7.4	7.9	8.4	8.9	9.4	9.9	10.4	10.9	11.4	11.9	12.4	12.9
7500	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0
7600	7.6	8.1	8.6	9.1	9.6	10.1	10.6	11.1	11.6	12.1	12.6	13.1
7700	7.7	8.2	8.7	9.2	9.7	10.2	10.7	11.2	11.7	12.2	12.7	13.2
7800	7.8	8.3	8.8	9.3	9.8	10.3	10.8	11.3	11.8	12.3	12.8	13.3
7900	7.9	8.4	8.9	9.4	9.9	10.4	10.9	11.4	11.9	12.4	12.9	13.4
8000	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5
8100	8.1	8.6	9.1	9.6	10.1	10.6	11.1	11.6	12.1	12.6	13.1	13.6
8200	8.2	8.7	9.2	9.7	10.2	10.7	11.2	11.7	12.2	12.7	13.2	13.7
8300	8.3	8.8	9.3	9.8	10.3	10.8	11.3	11.8	12.3	12.8	13.3	13.8
8400	8.4	8.9	9.4	9.9	10.4	10.9	11.4	11.9	12.4	12.9	13.4	13.9
8500	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0
8600	8.6	9.1	9.6	10.1	10.6	11.1	11.6	12.1	12.6	13.1	13.6	14.1
8700	8.7	9.2	9.7	10.2	10.7	11.2	11.7	12.2	12.7	13.2	13.7	14.2
8800	8.8	9.3	9.8	10.3	10.8	11.3	11.8	12.3	12.8	13.3	13.8	14.3
8900	8.9	9.4	9.9	10.4	10.9	11.4	11.9	12.4	12.9	13.4	13.9	14.4
9000	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5
9100	9.1	9.6	10.1	10.6	11.1	11.6	12.1	12.6	13.1	13.6	14.1	14.6
9200	9.2	9.7	10.2	10.7	11.2	11.7	12.2	12.7	13.2	13.7	14.2	14.7
9300	9.3	9.8	10.3	10.8	11.3	11.8	12.3	12.8	13.3	13.8	14.3	14.8
9400	9.4	9.9	10.4	10.9	11.4	11.9	12.4	12.9	13.4	13.9	14.4	14.9
9500	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0
9600	9.6	10.1	10.6	11.1	11.6	12.1	12.6	13.1	13.6	14.1	14.6	15.1
9700	9.7	10.2	10.7	11.2	11.7	12.2	12.7	13.2	13.7	14.2	14.7	15.2
9800	9.8	10.3	10.8	11.3	11.8	12.3	12.8	13.3	13.8	14.3	14.8	15.3
9900	9.9	10.4	10.9	11.4	11.9	12.4	12.9	13.4	13.9	14.4	14.9	15.4
10000	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5
10100	10.1	10.6	11.1	11.6	12.1	12.6	13.1	13.6	14.1	14.6	15.1	15.6
10200	10.2	10.7	11.2	11.7	12.2	12.7	13.2	13.7	14.2	14.7	15.2	15.7
10300	10.3	10.8	11.3	11.8	12.3	12.8	13.3	13.8	14.3	14.8	15.3	15.8
10400	10.4	10.9	11.4	11.9	12.4	12.9	13.4	13.9	14.4	14.9	15.4	15.9
10500	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0
10600	10.6	11.1	11.6	12.1	12.6	13.1	13.6	14.1	14.6	15.1	15.6	16.1
10700	10.7	11.2	11.7	12.2	12.7	13.2	13.7	14.2	14.7	15.2	15.7	16.2
10800	10.8	11.3	11.8	12.3	12.8	13.3	13.8	14.3	14.8	15.3	15.8	16.3
10900	10.9	11.4	11.9	12.4	12.9	13.4	13.9	14.4	14.9	15.4	15.9	16.4
11000	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0	16.5
11100	11.1	11.6	12.1	12.6	13.1	13.6	14.1	14.6	15.1	15.6	16.1	16.6
11200	11.2	11.7	12.2	12.7	13.2	13.7	14.2	14.7	15.2	15.7	16.2	16.7
11300	11.3	11.8	12.3	12.8	13.3	13.8	14.3	14.8	15.3	15.8	16.3	16.8
11400	11.4	11.9	12.4	12.9	13.4	13.9	14.4	14.9	15.4	15.9	16.4	16.9
11500	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0	16.5	17.0
11600	11.6	12.1	12.6	13.1	13.6	14.1	14.6	15.1	15.6	16.1	16.6	17.1
11700	11.7	12.2										



## R 1980

1



## JAN 1989



YEAR 1980

1



YEAR 124







YEAR 199



YEAR 1980

- 12



### MAXIMUM SHORT DURATION PRECIPITATION

YEAR 196



### MAXIMUM SHORT DURATION PRECIPITATION



## YEAR 1956.

- 18 -



YEAR 1980

—



## YEAR 1960

- 17



## YEAR 198

- 1







## YEAR 1980

2



REAL 1788

21



## YEAR 1980

- 32 -



YEAR 198

22



## YEAR 1980

11



## YEAR 1980

	5	10	15	20	30	45	60	90	100	120	50	180
1920-21	1.7	2.6	3.6	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
21	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
22	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
23	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
24	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
25	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
26	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
27	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
28	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
29	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
30	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
31	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
32	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
33	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
34	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
35	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
36	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
37	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
38	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
39	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
40	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
41	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
42	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
43	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
44	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
45	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
46	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
47	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
48	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
49	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
50	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
51	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
52	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
53	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
54	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
55	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
56	2.5	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2

[illegible]

BROOKVILLE, TEXAS												
1900	108	116	116	117	120	126	127	129	130	132	135	135
1910	120	126	126	129	131	135	136	138	139	141	142	142
1920	135	145	145	147	151	154	155	157	158	160	161	162
1930	145	154	154	157	161	164	165	167	168	170	171	172
1940	157	167	167	170	174	177	178	180	181	183	184	185
1950	170	181	181	184	188	191	192	194	195	197	198	199
1960	184	195	195	198	202	205	206	208	209	211	212	213
1970	200	211	211	214	218	221	222	224	225	227	228	229
1980	214	225	225	228	232	235	236	238	239	241	242	243
1990	228	239	239	242	246	249	250	252	253	255	256	257
2000	242	253	253	256	260	263	264	266	267	269	270	271
2010	256	267	267	270	274	277	278	280	281	283	284	285
2020	270	281	281	284	288	291	292	294	295	297	298	299
2030	284	295	295	298	302	305	306	308	309	311	312	313
2040	298	309	309	312	316	319	320	322	323	325	326	327
2050	312	323	323	326	330	333	334	336	337	339	340	341
2060	326	337	337	340	344	347	348	350	351	353	354	355
2070	340	351	351	354	358	361	362	364	365	367	368	369
2080	354	365	365	368	372	375	376	378	379	381	382	383
2090	368	379	379	382	386	389	390	392	393	395	396	397
2100	382	393	393	396	400	403	404	406	407	409	410	411
2110	396	407	407	410	414	417	418	420	421	423	424	425
2120	410	421	421	424	428	431	432	434	435	437	438	439
2130	424	435	435	438	442	445	446	448	449	451	452	453
2140	438	449	449	452	456	459	460	462	463	465	466	467
2150	452	463	463	466	470	473	474	476	477	479	480	481
2160	466	477	477	480	484	487	488	490	491	493	494	495
2170	480	491	491	494	498	501	502	504	505	507	508	509
2180	494	505	505	508	512	515	516	518	519	521	522	523
2190	508	519	519	522	526	529	530	532	533	535	536	537
2200	522	533	533	536	540	543	544	546	547	549	550	551
2210	536	547	547	550	554	557	558	560	561	563	564	565
2220	550	561	561	564	568	571	572	574	575	577	578	579
2230	564	575	575	578	582	585	586	588	589	591	592	593
2240	578	589	589	592	596	599	600	602	603	605	606	607
2250	592	603	603	606	610	613	614	616	617	619	620	621
2260	606	617	617	620	624	627	628	630	631	633	634	635
2270	620	631	631	634	638	641	642	644	645	647	648	649
2280	634	645	645	648	652	655	656	658	659	661	662	663
2290	648	659	659	662	666	669	670	672	673	675	676	677
2300	662	673	673	676	680	683	684	686	687	689	690	691
2310	676	687	687	690	694	697	698	700	701	703	704	705
2320	690	701	701	704	708	711	712	714	715	717	718	719
2330	704	715	715	718	722	725	726	728	729	731	732	733
2340	718	729	729	732	736	739	740	742	743	745	746	747
2350	732	743	743	746	750	753	754	756	757	759	760	761
2360	746	757	757	760	764	767	768	770	771	773	774	775
2370	760	771	771	774	778	781	782	784	785	787	788	789
2380	774	785	785	788	792	795	796	798	799	801	802	803
2390	788	799	799	802	806	809	810	812	813	815	816	817
2400	802	813	813	816	820	823	824	826	827	829	830	831
2410	816	827	827	830	834	837	838	840	841	843	844	845
2420	830	841	841	844	848	851	852	854	855	857	858	859
2430	844	855	855	858	862	865	866	868	869	871	872	873
2440	858	869	869	872	876	879	880	882	883	885	886	887
2450	872	883	883	886	890	893	894	896	897	899	900	901
2460	886	897	897	900	904	907	908	910	911	913	914	915
2470	900	911	911	914	918	921	922	924	925	927	928	929
2480	914	925	925	928	932	935	936	938	939	941	942	943
2490	928	939	939	942	946	949	950	952	953	955	956	957
2500	942	953	953	956	960	963	964	966	967	969	970	971
2510	956	967	967	970	974	977	978	980	981	983	984	985
2520	970	981	981	984	988	991	992	994	995	997	998	999
2530	984	995	995	998	1002	1005	1006	1008	1009	1011	1012	1013
2540	998	1009	1009	1012	1016	1019	1020	1022	1023	1025	1026	1027
2550	1012	1023	1023	1026	1030	1033	1034	1036	1037	1039	1040	1041
2560	1026	1037	1037	1040	1044	1047	1048	1050	1051	1053	1054	1055
2570	1040	1051	1051	1054	1058	1061	1062	1064	1065	1067	1068	1069
2580	1054	1065	1065	1068	1072	1075	1076	1078	1079	1081	1082	1083
2590	1068	1079	1079	1082	1086	1089	1090	1092	1093	1095	1096	1097
2600	1082	1093	1093	1096	1100	1103	1104	1106	1107	1109	1110	1111
2610	1096	1107	1107	1110	1114	1117	1118	1120	1121	1123	1124	1125
2620	1110	1121	1121	1124	1128	1131	1132	1134	1135	1137	1138	1139
2630	1124	1135	1135	1138	1142	1145	1146	1148	1149	1151	1152	1153
2640	1138	1149	1149	1152	1156	1159	1160	1162	1163	1165	1166	1167
2650	1152	1163	1163	1166	1170	1173	1174	1176	1177	1179	1180	1181
2660	1166	1177	1177	1180	1184	1187	1188	1190	1191	1193	1194	1195
2670	1180	1191	1191	1194	1198	1201	1202	1204	1205	1207	1208	1209
2680	1194	1205	1205	1208	1212	1215	1216	1218	1219	1221	1222	1223
2690	1208	1219	1219	1222	1226	1229	1230	1232	1233	1235	1236	1237
2700	1222	1233	1233	1236	1240	1243	1244	1246	1247	1249	1250	1251
2710	1236	1247	1247	1250	1254	1257	1258	1260	1261	1263	1264	1265
2720	1250	1261	1261	1264	1268	1271	1272	1274	1275	1277	1278	1279
2730	1264	1275	1275	1278	1282	1285	1286	1288	1289	1291	1292	1293
2740	1278	1289	1289	1292	1296	1299	1300	1302	1303	1305	1306	1307
2750	1292	1303	1303	1306	1310	1313	1314	1316	1317	1319	1320	1321
2760	1306	1317	1317	1320	1324	1327	1328	1330	1331	1333	1334	1335
2770	1320	1331	1331	1334	1338	1341	1342	1344	1345	1347	1348	1349
2780	1334	1345	1345	1348	1352	1355	1356	1358	1359	1361	1362	1363
2790	1348	1359	1359	1362	1366	1369	1370	1372	1373	1375	1376	1377
2800	1362	1373	1373	1376	1380	1383	1384	1386	1387	1389	1390	1391
2810	1376	1387	1387	1390	1394	1397	1398	1400	1401	1403	1404	1405
2820	1390	1401	1401	1404	1408	1411	1412	1414	1415	1417	1418	1419
2830	1404	1415	1415	1418	1422	1425	1426	1428	1429	1431	1432	1433
2840	1418	1429	1429	1432	1436	1439	1440	1442	1443	1445	1446	1447
2850	1432	1443	1443	1446	1450	1453	1454	1456	1457	1459	1460	1461
2860	1446	1457	1457	1460	1464	1467	1468	1470	1471	1473	1474	1475
2870	1460	1471	1471	1474	1478	1481	1482	1484	1485	1487	1488	1489
2880	1474	1485	1485	1488	1492	1495	1496	1498	1499	1501	1502	1503
2890	1488	1499	1499	1502	1506	1509	1510	1512	1513	1515	1516	1517
2900	1502	1513	1513	1516	1520	1523	1524	1526	1527	1529	1530	1531
2910	1516	1527	1527	1530	1534	1537	1538	1540	1541	1543	1544	1545
2920	1530	1541	1541	1544	1548	1551	1552	1554	1555	1557	1558	1559
2930	1544	1555	1555	1558	1562	1565	1566	1568	1569	1571	1572	1573
2940	1558	1569	1569	1572	1576	1579	1580	1582	1583	1585	1586	1587
2950	1572	1583	1583	1586	1590	1593	1594	1596	1597	1599	1600	1601
2960	1586	1597	1597	1600	1604	1607	1608	1610	1611	1613	1614	1615
2970	1600	1611	1611	1614	1618	1621	1622	1624	1625	1627	1628	1629
2980	1614	1625	1625	1628	1632							







### MAXIMUM SHORT DURATION PRECIPITATION

YEAR 1980



YEAR 1980

- 3 -



## YEAR 1944

- 39



## AR 1980



## YEAR 1361

- 31 -



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## YEAR 1980

- 22 -



## MAXIMUM SHORT DURATION PRECIPITATION

This table contains statistics of maximum amounts of precipitation during the calendar year indicated. Data are for stations equipped with recording gages and are from airport locations unless otherwise noted. The ending time and date is included in the table for each monthly maximum amount except in cases of zero and trace events. Maximum amounts for the year with month of occurrence are also indicated for each of the 12 time periods. Annual extremes and New records are based on available data. Some periods of record may be missing.

Beginning with data for 1973 and continuing to the present time, only the maximum amount of precipitation that occurred during the month for each of the 12 time periods shown were determined. These maximum amounts may be from different storms, and the threshold intensities required for Excessive Precipitation prior to 1973 are not a consideration. (A detailed explanation of the methods and threshold intensities used prior to 1973 can be found in the publications listed in the following paragraph.)

Publication of Data: A summary of maximum precipitation data for the years prior to 1896 was published in the annual report of the Chief of the Weather Bureau for 1895-1896. Excessive precipitation data for the period 1881-1896 were published in the annual report of the Chief of the Weather Bureau 1896-1897. Data for the years 1897 through 1934 have been published in the appropriate annual reports of the Chief of the Weather Bureau. For the years 1935 through 1949 these data were published in the appropriate issue of the United States Meteorological Yearbook. The annual issues of the Climatic Data National Summary present Excessive Precipitation each year 1950-1972 and Maximum Precipitation for 1973 and succeeding years.

U Indicates Urban sites

M No Record

T Trace event

+ Also occurred on an earlier date or dates

\* Equals or exceeds previous record for duration and period of record. Period of record, updated through the current year, includes data compiled in Weather Bureau Technical Paper No. 2, revised 1963. This publication contains extreme data for 296 first order stations from beginning of record through 1961. Due to data limitations, new records are denoted only for 5, 10, 15, 30, 60, 120, and 180 minutes. (The 15 minute amount was not computed for 1936-1943.)

District of Columbia - See Virginia.

# SUNSHINE, AMOUNT AND PERCENT

YEAR 1985

Station	January		February		March		April		May		June		July		August		September		October		November		December		Annual	
	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible
ALABAMA																										
BIRMINGHAM U	106	33	204	65	195	52	262	67	246	57	336	78	346	79	304	73	196	53	250	71	184	53	194	63	2807	63
MONTGOMERY	175	33	191	60	195	53	277	71	299	70	343	80	339	78	325	75	255	69	224	63	174	55	202	65	2829	66
ALASKA																										
ANCHORAGE	89	44	94	78	160	44	182	41	148	27	163	28	228	37	200	41	149	39	76	26	50	23	99	57	1625	36
NOME	54	13	129	50	131	36	259	57	218	34	90	14	234	39	123	24	115	29	69	10	62	27	47	68	1582	34
ARIZONA																										
FLAGSTAFF	206	66	217	75	307	83	364	93	346	80	409	94	376	85	337	81	347	91	335	95	263	90	277	90	3437	86
PHOENIX	181	57	215	67	314	85	342	87	403	94	402	93	369	84	364	80	347	88	301	85	295	94	284	92	3405	81
TUCSON	217	68	227	71	310	93	370	95	416	97	358	84	256	59	289	70	266	80	301	85	295	94	284	92	3405	81
YUMA	247	77	270	84	327	88	357	92	406	95	405	95	384	88	384	93	356	96	344	98	292	93	261	78	4013	90
ARKANSAS																										
FORT SMITH	118	38	180	59	206	55	278	71	292	67	342	79	420	95	374	90	237	64	259	74	202	65	174	57	3085	69
NOV. LITTLE ROCK	214	68	240	76	277	75	343	87	313	72	343	79	398	90	338	81	246	66	268	76	196	63	171	56	3347	75
CALIFORNIA																										
EUREKA U	176	46	108	35	256	69	257	64	176	39	142	40	215	47	181	42	193	52	110	34	110	37	70	24	2014	45
FRESNO	104	34	151	48	276	74	312	79	369	84	418	95	426	96	416	95	359	96	311	89	244	79	143	47	3531	79
PER. BLUFF	207	69	213	69	326	88	370	93	433	97	396	91	441	97	418	94	349	93	305	88	209	70	193	67	3862	87
SACRAMENTO	92	30	126	41	334	90	364	92	425	96	429	97	441	98	420	99	362	97	325	94	249	87	142	48	3710	83
SAN DIEGO	184	58	250	78	300	81	297	76	225	52	331	77	343	79	306	74	209	56	241	68	257	82	241	68	3203	72
COLORADO																										
DENVER	194	64	213	69	249	67	298	75	313	70	390	87	364	81	317	74	114	45	269	78	172	63	157	54	3240	73
GRAND JUNCTION	108	36	178	57	197	57	212	79	312	70	410	96	384	86	373	88	292	78	258	75	207	69	206	70	2841	71
PUEBLO	234	73	236	75	302	81	341	86	336	76	387	87	385	86	361	88	320	86	297	85	191	63	150	51	3539	79
CONNECTICUT																										
HARTFORD	191	66	239	78	200	54	193	48	296	65	322	71	354	78	274	64	249	67	181	53	133	45	164	57	2805	63
DIST/COLUMBIA																										
WASHINGTON NATIONAL	91	31	192	60	186	50	242	61	319	72	353	79	365	81	320	76	278	75	221	64	169	56	136	46	2874	64
FLORIDA																										
APPALACHICOLA U	161	49	162	50	131	27	217	56	329	78	265	67	260	61	262	64	253	68	245	69	163	51	149	59	2608	59
JACKSONVILLE	148	52	242	75	273	73	310	85	368	87	372	88	388	90	373	91	331	89	225	71	219	69	143	47	3449	74
KEY WEST	279	83	270	82	337	90	314	82	329	80	330	81	343	82	322	80	297	80	271	75	166	51	193	58	3449	74
MIAMI	253	76	249	76	317	85	297	77	335	81	332	81	337	80	305	75	291	79	268	75	210	64	231	71	3423	77
TAMPA	195	59	209	64	253	69	286	74	344	82	360	86	332	74	307	76	110	84	256	72	158	49	217	67	3226	72
GEORGIA																										
ATLANTA	111	35	211	66	192	52	249	64	260	60	295	68	365	87	315	76	243	66	247	70	187	60	200	65	2875	65
MACON	151	47	227	71	221	60	269	69	280	65	294	69	331	76	250	65	278	75	258	73	214	68	209	67	3080	64
SAVANNAH	148	46	209	65	150	40	276	71	273	64	279	65	295	68	276	67	210	57	195	55	150	57	177	55	2665	60
HAWAII																										
HONOLOULU	212	62	190	54	113	30	204	54	191	47	153	38	188	46	213	54	188	51	172	48	173	51	217	70	3229	60
KAHULUI	192	56	178	54	252	68	272	72	299	71	298	74	286	70	298	74	267	71	266	74	251	76	159	60	3050	69
LINOLE	212	68	202	61	207	56	226	60	259	64	264	66	266	65	292	73	274	75	269	74	267	69	203	60	2961	67
LINOLE	117	40	199	60	218	59	186	49	156	38	192	48	192	46	267	67	213	58	268	58	204	61	180	54	2351	53
IDAHO																										
BOISE	74	26	97	32	202	55	283	70	290	64	360	79	381	82	373	86	283	75	236	74	112	39	77	28	2769	62
POCATELLO	84	29	129	42	208	56	280	70	241	53	366	80	394	85	338	79	291	78	242	71	137	47	150	53	2861	64
ILLINOIS																										
CAIRO U	92	30	116	37	135	36	223	56	223	51	291	66	379	65	341	81	226	61	251	72	171	56	124	41	2571	58
CHICAGO O HARE	178	43	132	40	158	43	188	47	246	58	286	63	341	74	246	57	244	65	204	59	177	60	107	39	2419	54
MOLINE	178	43	132	40	158	43	188	47	246	58	286	63	341	74	246	57	244	65	204	59	177	60	107	39	2419	54
PEORIA	178	43	132	40	158	43	188	47	246	58	286	63	341	74	246	57	244	65	204	59	177	60	107	39	2419	54
SPRINGFIELD	142	47	115	37	139	37	193	49	299	67	347	77	365	80	311	73	250	75	261	76	199	65	122	42	2773	62
INDIANA																										
EVANSVILLE	179	45	149	47	167	45	253	64	229	52	360	81	355	79	347	82	252	68	252	72	190	62	140	47		



# SUNSHINE, AMOUNT AND PERCENT

YEAR 1940

Station	January		February		March		April		May		June		July		August		September		October		November		December		Annual			
	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible		
MINNESOTA	140	50	146	49	234	67	261	64	323	67	297	67	333	70	225	51	196	52	142	42	125	44	112	42	2533	57		
SOUTH MINNESOTA	154	54	216	71	221	60	264	65	330	72	313	67	341	81	274	63	206	55	160	47	144	50	102	37	2763	62		
MILWAUKEE	74	27	143	51	140	70	217	56	249	58	311	73	327	75	285	69	192	52	255	72	173	55	178	57	2563	58		
MILWAUKEE	172	47	217	34	153	41	252	64	256	58	324	73	371	83	313	74	274	73	266	77	177	58	117	40	2756	61		
WISCONSIN	144	47	127	41	191	52	273	68	243	57	342	77	362	80	304	72	291	74	275	79	193	64	145	49	2897	65		
ST. LOUIS	173	46	144	46	183	46	260	66	305	69	346	77	367	81	311	74	252	67	248	72	172	57	86	29	2802	63		
KEESAU	119	39	149	46	196	53	241	61	229	52	265	60	389	87	314	75	254	68	283	61	210	69	144	44	2789	63		
MONTANA	141	50	127	42	213	59	235	62	301	65	266	57	301	63	214	49	202	54	183	54	104	36	68	25	2454	55		
HEAT FAMILY	109	39	87	29	160	49	260	64	255	54	292	61	389	81	272	62	212	56	206	61	172	44	47	18	2432	54		
HABER	117	41	136	46	219	59	337	82	417	67	403	84	437	90	354	80	275	72	213	64	117	42	101	39	3122	70		
HELENA	177	46	119	40	182	49	278	68	268	59	248	52	354	74	296	68	206	55	230	68	138	49	86	32	2536	57		
MONTANA	144	57	135	44	172	44	239	59	242	52	320	67	416	97	385	69	290	72	292	87	188	67	124	46	2934	65		
NEBRASKA	147	48	103	33	206	56	220	70	317	71	377	87	357	74	317	74	290	77	266	77	225	76	131	46	3014	67		
SOUTH DAKOTA	140	47	186	60	210	57	315	79	296	66	358	79	385	84	338	79	274	73	270	78	198	67	151	52	3120	70		
MANA NORTH	114	38	109	35	229	62	276	69	225	50	317	70	306	67	249	59	304	81	277	80	193	65	106	37	2708	61		
VALENTINE	171	59	171	56	191	52	294	73	281	62	336	77	362	78	294	68	301	80	231	67	214	73	155	55	2999	67		
NEVADA	195	65	213	68	262	71	324	81	267	60	395	89	376	83	371	88	307	85	309	89	231	77	227	77	3477	78		
LAKE MEAD	182	58	206	72	208	63	322	82	350	80	414	95	392	88	407	97	339	91	331	95	252	82	253	84	3779	85		
GENU	155	51	184	61	314	85	358	90	405	91	429	96	436	96		359	96	286	86	244	81	226	77					
VIRGINIA	124	41	160	52	223	60	290	73	283	63	347	77	392	85	392	92	300	80	266	77	159	53	168	58	3101	69		
NEW HAMPSHIRE	171	59	210	69	182	49	158	39	272	60	276	60	339	73	283	66	261	70	176	52	130	44	170	60	2627	59		
MT. WASHINGTON OBS.	115	39	121	36	125	33	126	31	219	47	149	32	128	27	134	31	136	36	63	18	62	21	81	29	1459	32		
NEW JERSEY	116	38	191	61	145	39	211	53	234	53	279	63	301	66	277	65	229	61	171	50	141	47	127	43	2424	54		
ATLANTIC CITY	168	52	206	68	166	45	211	53	254	57	318	71	308	68	243	57	245	66	195	57	160	54	142	49	2607	58		
NEW MEXICO	169	54	230	72	247	67	312	80	338	78	359	83	349	79	310	74	292	78	302	86	267	86	261	85	3436	77		
NEW MEXICO	94	30	140	44	214	58	229	59	280	65	281	65	347	79	179	43	230	62	272	77	212	68	168	54	2647	59		
NEW YORK	149	51	207	68	206	56	219	55	290	64	284	62	310	67	220	51	248	66	145	42	78	27	128	45	2484	56		
ALBANY	105	36	152	50	159	47	203	51	298	66	284	62	323	70	256	60	237	63	144	42	76	26	124	44	2361	53		
ROCHESTER	11	39	119	39	137	37	207	52	266	58	256	56	294	63	247	57	218	58	129	38	70	24	92	33	2148	48		
ROCHESTER	140	46	143	47	149	36	203	50	294	65	274	60	309	66	292	68	237	63	118	34	53	18	85	30	2277	51		
ROCHESTER	109	37	127	41	146	39	182	44	289	63	227	49	268	58	213	49	206	55	97	28	54	19	80	29	1996	45		
NORTH CAROLINA	132	42	119	69	145	50	284	72	299	69	301	69	313	71	259	62	188	50	201	58	185	60	183	60	2748	62		
ASHEVILLE	98	31	152	51	126	34	213	54	249	57	270	62	292	66	276	66	199	54	197	56	174	56	139	45	2395	54		
CHARLOTTE	116	37	120	65	203	55	277	71	322	74	337	77	366	83	345	83	233	63	221	63	200	65	188	62	3028	68		
GREENSBORO	122	40	213	67	193	52	273	69	311	71	330	75	355	80	318	76	218	58	213	61	210	68	191	63	2948	66		
FALLS	74	24	203	64	158	42	210	51	224	51	269	62	266	60	293	69	157	42	199	57	197	64	157	52	2408	54		
WILMINGTON	176	43	207	65	200	54	285	73	313	72	277	64	261	59	277	67	189	51	209	60	196	63	180	59	2730	61		
NORTH DAKOTA	142	54	100	37	232	67	325	80	357	77	319	67	336	70	263	60	261	69	192	57	152	54	107	40	2796	62		
SIOUX FALLS	104	29	134	45	274	74	352	66	390	84	315	66	375	78	287	65	235	62	180	53	115	41	87	33	2852	64		
WILLISTON	172	62	151	51	258	70	352	66	397	84	366	76	383	79	280	63	234	62	203	60	139	50	122	47	3056	68		
OHIO	170	33	106	35	145	23	130	33	232	64	285	64	325	72	366	86	256	69	141	41	90	31	10	4	2180	49		
CINCINNATI AREA OH	20	76	24	75	33	174	43	277	53	290	64	290	63	203	47	275	74	223	65	125	42	82	28	2158	48			
CLEVELAND	93	29	116	37	137	37	172	43	241	54	282	63	251	55	215	51	254	68	203	59	124	41	78	27	2155	48		
COLUMBUS	103	34	109	47	146	39	181	46	241	54	325	72	306	68	235	55	268	72	190	55	129	43	92	32	2342	52		
DAYTON	176	46	153	51	214	58	208	52	317	69	379	69	294	62	216	51	254	68	194	57	134	45	82	29	2504	56		
TOLEDO																												
OKLAHOMA	153	46	226	71	246	66	299	76	316	72	361	87	433	98	361	86	261	70	244	84	215	69	210	69	3374	76		
OKLAHOMA CITY	149	29	188	57	197	43	240	61	273	63	318	73	418	94	329	79	221	59	277	79	170							



# SUNSHINE, AMOUNT AND PERCENT

U.S. AIR

Station	January		February		March		April		May		June		July		August		September		October		November		December		Annual	
	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible
<b>SOUTH CAROLINA</b>																										
HURON	162	54	164	64	274	74	333	82	355	77	310	67	343	77	347	57	278	74	238	70	192	66	116	48	1040	64
CARTERSVILLE	154	51	167	66	222	60	261	65	280	57	319	69	351	75	267	62	240	64	270	64	138	41	184	37	2484	60
<b>TENNESSEE</b>																										
CHATTANOOGA	106	34	140	60	164	44	253	64	301	69	268	62	342	77	116	81	267	70	252	72	188	61	273	73	2891	65
KNOXVILLE	67	20	141	51	178	47	245	77	122	74	337	77	355	80	327	78	261	68	257	73	205	66	154	51	2400	65
MEMPHIS	130	42	174	56	167	47	250	64	298	69	336	77	394	92	359	86	253	68	267	82	191	62	188	64	3035	68
NASHVILLE	75	24	149	47	180	34	217	55	216	49	288	65	328	74	277	66	208	58	242	69	176	57	184	61	2495	58
<b>TEXAS</b>																										
ARLINGTON	147	46	195	61	250	68	321	82	276	64	340	80	414	65	344	87	324	80	249	76	206	64	174	50	3181	71
AMARILLO	143	44	213	67	274	74	303	77	304	70	380	87	393	89	115	79	211	68	311	89	276	73	208	68	3335	76
AUSTIN	124	38	177	55	198	53	261	67	254	60	371	88	384	89	279	68	235	63	265	74	201	63	163	51	2704	65
BROWNSVILLE	67	20	132	40	166	45	241	63	261	61	356	86	366	87	289	71	283	77	195	54	157	44	110	34	2653	65
DALLAS	124	38	177	55	198	53	261	67	254	60	371	88	384	89	279	68	235	63	265	74	201	63	163	51	2704	65
EL PASO	214	67	249	61	306	82	337	87	302	70	394	94	400	92	361	84	372	73	311	88	266	84	265	85	3780	81
GALVESTON	74	27	112	35	147	38	204	70	204	71	342	81	376	76	364	74	263	71	245	69	186	47	178	50	2724	61
HOUSTON	87	27	138	47	149	40	247	64	274	57	335	80	339	79	275	67	237	64	248	70	186	58	162	51	2724	59
LUBBOCK	157	50	213	67	311	84	338	87	330	76	349	81	400	92	341	82	243	66	303	86	212	67	210	67	3441	77
MIDLAND	118	36	141	44	180	47	204	57	214	52	320	76	351	82	246	65	110	48	222	63	184	55	125	34	2669	60
PORT ARTHUR	130	40	171	56	225	60	264	69	214	52	320	76	351	82	246	65	110	48	222	63	184	55	125	34	2669	60
SAN ANTONIO	130	40	171	56	225	60	264	69	214	52	320	76	351	82	246	65	110	48	222	63	184	55	125	34	2669	60
<b>UTAH</b>																										
MILFORD	150	49	205	66	245	63	275	69	271	61	409	90	336	74	356	84	312	84	289	83	225	74	271	75	3283	74
SALT LAKE CITY	130	44	171	55	245	66	325	81	328	73	415	92	402	88	324	77	266	76	250	73	200	67	74	25	3156	71
<b>VERMONT</b>																										
SUDBURY	124	44	116	38	142	49	145	36	244	53	214	46	214	50	196	47	195	52	95	24	79	27	110	40	1944	44
<b>VIRGINIA</b>																										
LYNCHBURG	141	46	227	72	198	53	226	57	304	69	347	79	348	78	308	73	205	55	195	56	190	67	164	58	2853	64
NEWPORT	120	39	211	67	197	51	267	68	257	59	273	62	277	62	275	66	179	51	202	58	186	61	147	62	2631	60
RICHMOND	137	44	216	69	276	56	267	68	378	70	352	80	355	74	218	71	359	84	217	67	194	66	198	64	3028	68
<b>WASHINGTON</b>																										
OUTLAW	93	34	84	24	40	22	175	43	150	32	120	25	191	39	128	29	142	38	120	36	18	7	27	5	1323	30
SEATTLE-TACOMA	100	36	95	32	136	37	255	60	197	41	182	38	312	65	214	49	152	40	197	56	81	22	42	16	1951	44
KONKANE	105	39	45	15	157	41	222	54	180	40	244	57	300	64	123	71	264	67	177	51	17	17	24	11	2188	49
WALLA WALLA	64	21	50	16	119	37	238	59	244	53	265	54	364	75	345	79	244	66	189	56	79	14	50	20	2212	49
<b>WEST INDIES</b>																										
SAN JUAN P.R.	264	76	242	72	332	69	315	84	265	71	270	93	377	67	351	92	212	54	119	33	101	30	12	4	2990	67
<b>WEST VIRGINIA</b>																										
PARKERSBURG	92	30	177	44	135	38	214	54	182	41	304	68	211	51	184	49	237	63	171	42	141	50	96	31	2112	48
<b>WISCONSIN</b>																										
GREEN BAY	118	44	187	62	262	71	243	60	356	78	352	76	373	79	276	64	246	66	209	61	140	46	95	35	2877	64
MILWAUKEE	116	40	181	59	156	42	179	44	275	60	305	68	304	66	216	50	194	52	170	50	146	50	74	24	2319	61
MILWAUKEE	103	35	145	47	137	37	159	40	282	62	292	64	294	61	198	46	195	52	176	51	121	41	64	24	2160	48
<b>WYOMING</b>																										
CHEYENNE	101	34	162	51	180	44	317	79	319	71	351	77	344	75	311	72	263	70	242	71	178	44	14	57	2738	61
LANDER	105	36	125	40	211	50	275	68	225	50	351	77	344	75	311	72	263	70	242	71	178	44	14	57	2738	61
SHERIDAN	171	59	160	53	221	50	307	76	314	68	356	76	364	77	294	68	262	70	238	70	150	52	116	42	2960	66

Data from airport unless otherwise specified.  
"U" indicates Urban, "R" indicates Rural, sites.

# ANNUAL CLIMATOLOGICAL DATA

## METRIC UNITS

YEAR 1980

State and Station	Temperature				Heating degree days Base 65°F	Cooling degree days Base 65°F	Precipitation				Relative humidity			Wind				Number of days																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	Averages		Extremes				Total	Snow†		700pm EST	700am EST	700pm EST	Average speed m/s	Resultant speed m/s	Resultant direction	Speed m/s	Direction (1.6 kilometers)	Fastest mile (1.6 kilometers)	Average sky cover Tenths	Sunrise to sunset																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	Daily maximum	Daily minimum	Annual	Date				Lowest	Date											mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.

See reference notes at end of table.

# ANNUAL CLIMATOLOGICAL DATA

## METRIC UNITS

1981-1982

State and Station	Temperature			Precipitation			Relative humidity			Wind			Number of days				
	Averages		Extremes	Heating degree days Base 65°F	Cooling degree days Base 65°F	Total		100 am EST	700 am EST	700 pm EST	Average speed	Resultant speed	Resultant direction	Speed	Direction	Fastest mile (16 kilometers)	Tenths
	Daily maximum	Daily minimum				24 hours	Greatest in 24 hours										
Date	C	F	Lowest	Date	C	F	Date	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
ALABAMA	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
ALASKA	18.3	6.9	11.1	34.1	21.1	34.1	21.1	153	21	100	153	21	100	153	21	100	153
ARIZONA	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
ARKANSAS	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
CALIFORNIA	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
COLORADO	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
CONNECTICUT	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
DELAWARE	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
FLORIDA	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
GEORGIA	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
ILLINOIS	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
INDIANA	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
IOWA	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
KANSAS	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
KENTUCKY	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
LOUISIANA	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
MAINE	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
MARYLAND	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
MASSACHUSETTS	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
MICHIGAN	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
MINNESOTA	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
MISSISSIPPI	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
MISSOURI	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
MONTANA	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
NEBRASKA	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
NEVADA	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
NEW HAMPSHIRE	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
NEW JERSEY	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
NEW MEXICO	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
NEW YORK	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
NORTH CAROLINA	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
NORTH DAKOTA	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
OHIO	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
OKLAHOMA	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
OREGON	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
PENNSYLVANIA	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
RHODE ISLAND	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
SOUTH CAROLINA	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
SOUTH DAKOTA	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
TENNESSEE	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
TEXAS	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
UTAH	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
Vermont	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
VIRGINIA	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
WASHINGTON	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
WASHINGTON STATE	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
WEST VIRGINIA	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
WISCONSIN	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153
WYOMING	24.6	16.4	19.4	56.1	11.7	54.1	10.0	153	21	100	153	21	100	153	21	100	153

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## 1983: 1983

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## YEAR 1980

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## ANNUAL CLIMATOLOGICAL DATA

## METRIC UNITS

1973-1974

State and Station	Temperature				Precipitation				Relative humidity			Wind				Number of days																		
	Averages		Extremes		Cooling degree days		Heating degree days		Snow f		%		m/s		Direction		Sunrise to sunset		Precipitation	Snow	Thunderstorms	Heavy fog	Max temp	Min Temp										
	Daily maximum	Daily minimum	Annual	Highest	Lowest	Date	Base 18.3°C	Base 18.3°C	Total	Greatest in 24 hours	Date (s)	%	700am EST	100pm EST	700pm EST	Average speed	Resultant speed	Resultant direction	Speed	Direction	Date	Average sky cover	Clear, 0-3	Partly cloudy, 0.4-0.7	Cloudy, 0.8-1.0	25mm or more	25mm or more	0 C and above	0 C and below	0 C and below				
	°C	°C	°C	°C	°C				mm	mm			%	%	%	%	m/s	m/s		m/s		Tenths												
TEXAS																																		
COMANCHE CREEK	27.7	14.4	21.4	35.3	-4.4	JUN 27	5.2	19.7	830	227	9-10	0	0	67	54	57	6.7	4.6	11	5.4	11	AUG 10	5.4	111	117	174	64	0	14	46	117	0	5	
DALLAS FT WORTH	25.4	12.4	19.7	45.0	-9.4	JUN 27	13.3	18.7	561	47	28-29	41	30	65	74	57	4.4	1.2	20	1.2	20	FEB 9	4.4	151	102	111	56	1	31	10	119	0	9	
DEL RIO	28.9	14.9	21.4	42.2	-6.1	JUN 28	7.6	20.4	359	359		T										MAR 31	3.9	164	101	77	49	5	24	1	150	0	14	
EL PASO	24.9	6.7	17.4	42.4	-8.9	AUG 30	14.7	13.4	166	33	12-17	74	102	34	77	44	7.7	0.5	4	17.4	21	MAR 31	3.9	164	101	77	49	5	24	1	113	0	61	
GALVESTON	27.7	14.4	20.7	31.4	-7.3	AUG 2	7.6	16.2	878	68	28	T	T	82	85	75	77				NOV 25	5.7	127	65	149	32	1	43	78	117	0	20		
HOUSTON INTERVIEW	27.1	14.4	20.4	41.7	-5.6	AUG 2	8.4	18.7	990	90	17-18	36	36	91	55	61	7.7	0.8	12	11.4	11	FEB 2	5.7	127	65	149	32	1	43	78	117	0	20	
LUBBOCK	27.4	9.7	16.2	42.2	-13.3	JUN 28	18.9	12.4	403	72	14-17	74	74	59	70	45	3.8	4.7	13	19	1.6	NOV 12	4.5	171	86	176	54	5	19	16	96	10	86	
MIDLAND	24.1	6.7	16.7	41.1	-10.8	JUN 27	16.9	11.4	461	70	25-26	76	144	62	77	44	3.8	5.2	14	11.4	01	JAN 31	4.4	184	102	94	4	26	12	107	4	73		
POST ARTHUR	25.7	15.2	20.4	34.4	-7.9	JUN 17	3.4	18.2	1589	43	5-6	18	18	84	60	62	4.9	4.2	0.7	14.6	08	FEB 2	5.3	114	100	141	53	0	53	42	107	0	13	
SAN ANGELO	25.4	11.4	18.4	42.6	-13.3	JUN 28	13.2	18.4	764	159	9-10	84	58	64	76	44	4.2	4.8	17	17.6	17	AUG 6	7.7	148	166	74	107	61	2	19	3	110	4	65
SAN ANTONIO	27.4	14.4	21.4	45.4	-7.2	JUN 28	6.8	18.6	615	40	6-7	T	T	74	92	53	4.9	4.1	17	15.4	07	AUG 6	5.5	118	120	128	80	0	71	24	112	0	26	
VICTORIA	25.8	15.7	21.1	37.8	-6.1	JUN 27	7.6	18.8	827	135	18-19	0	T	86	90	59	6.4	4.5	1.2	17	24.1	F	19	5.9	112	102	152	76	0	45	56	118	0	24
MACO	25.4	12.4	19.4	42.4	-8.3	JUN 27	12.7	17.6	584	68	8-9	20	27	73	64	54	51	4.7	1.5	18	14.3	34	MAR 17	5.1	146	96	134	74	0	33	13	132	0	77
MICIGITA FALLS	25.3	10.4	17.4	47.2	-15.0	JUN 28	17.3	18.6	658	158	26-27	160	69	65	76	45	4.5	5.7	1.4	18	21.1	3	7	4.6	170	55	111	59	3	40	6	123	9	64
UTAH																																		
MILFORD	18.7	1.1	6.9	34.3	-17.2	JUL 25	33.9	33.1	312	25	6-10	86	124	49	44	103	64	4.0	1.2	10	21.4	5M	MAY 23	4.3	177	56	47	76	17	57	8	175	0	
SALT LAKE CITY	17.9	5.7	11.6	33.3	-20.0	JAN 31	28.6	54.3	477	26	13-14	1415	272	49	44	103	64	4.0	1.2	10	21.4	5M	MAY 23	4.3	177	56	47	76	17	57	8	175	0	
VERMONT																																		
RURLINGTON	11.9	1.7	6.4	33.4	-32.2	DEC 26	44.1	24.3	785	55	29-30	1560	254	74	75	62	67	7.0	0.5	24	15.6	5	JAN 11	7.3	48	127	711	158	14	25	15	4	81	168
VIRGINIA																																		
LYNCHBURG	19.3	7.4	13.4	37.8	-15.6	DEC 26	25.1	77.1	785	37	17-18	777	191	70	51	62				15.6	NA	21	5.5	129	103	134	104	10	10	54	14	97	0	
NORFOLK	20.2	10.2	15.2	40.0	-12.8	AUG 1	21.0	10.8	975	105	15-16	1094	315	75	74	57	64	4.5	2.2	17.9	01	3+	5.7	117	108	141	112	7	43	7	53	6	62	
RICHMOND	20.8	6.6	14.7	33.3	-15.0	JUL 16	22.2	9.6	1045	88	18-19	986	339	72	82	51	63	3.5	0.6	24	18.6	55	5.8	114	98	153	113	9	43	15	65	9	82	
ROANOKE	19.3	7.4	13.4	37.8	-16.1	JUL 16	24.8	72.2	878	70	13-14	795	236	75	76	57	60	3.7	1.4	30	20.6	34	JUL 16	5.9	109	102	155	112	8	45	12	44	16	94
WALLOPS ISLAND	17.3	6.4	13.2	35.6	-13.3	AUG 1	25.0	66.1	848	79	23	493	142	63	63						33.5	NA	1											
WASHINGTON																																		
OLYMPIA	15.7	4.1	9.9	33.3	-17.8	AUG 29	30.50	25	1257	69	25-26	983	257	77	66	85	91	3.0	1.3	21	17.0	25	NOV 25	7.8	38	83	245	166	12	12	100	1	4	92
QUILLAYUTE	13.9	5.7	9.6	33.9	-12.2	JAN 29	31.49	6	2600	136	20-21	523	127	83	75	91	93	2.4	3.6	18	17.9	5M	NOV 25	7.8	38	83	245	166	12	12	100	1	4	92
SEATTLE	15.4	7.4	11.7	29.4	-9.9	JAN 29	24.36	41	1024	43	11-12	391	229	75	64	77	84				15.7	WSA	22	7.5	52	81	233	147	4	7	38	0	5	36
SEATTLE-TACOMA	14.7	6.8	10.8	30.6	-9.4	AUG 29	27.60	30	904	41	20-21	297	130	75	64	77	84	3.7	0.9	18	19.2	5M	12	7.5	52	81	233	147	4	7	38	0	5	36
SPOKANE	13.8	3.2	8.5	38.3	-21.1	JAN 22	36.70	126	433	27	DEC 22	813	127	69	56	74	83	3.7	1.3	19	14.6	5M	28	7.2	58	93	215	111	13	20	62	8	39	121
STAMPEDE PASS R	7.6	1.0	4.3	27.2	-20.0	JAN 29	50.80	5	2110	95	25-26	7694	386	80	75	67						JAN 28	7.6	57	64	245	204	75	0	72	157	4	0	72
WALLA WALLA U	17.1	6.7	11.4	39.4	-15.6	JAN 30	26.80	385	521	78	13-14	638	155	6.6	90	85	191	117			SE	12	6.6	90	85	191	117	9	22	27	65	0	72	

See reference notes at end of table.

## C961 0834

<sup>4</sup> Includes all forms of frozen precipitation, except hail.

\* And also on an earlier date or dates

Number of days maximum 21<sup>st</sup> of above for } - K<sub>1</sub>, N<sub>1</sub>, S<sub>1</sub>, J<sub>1</sub>, J<sub>2</sub>

Y Peak Count

Sun below horizon November 23, 1901.

Submitted November 24 - Accepted for publication November 24

Data from airport unless otherwise specified. U indicates Urban. R indicates Rural. sites.

Precipitation data in column headed "Greatest in 24 hours" are computed on a 24-hour basis without regard to calendar day - data may include precipitation with a measurable amount from the last day of the previous month or the first day of the following month.

Wind directions under resultant direction are in tens of degrees.

Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed when the wind direction is in tens of degrees. These stations are not equipped with a recording anemometer from which "Fastest Mile" data can be evaluated.

Data in this table are obtained by conversion from data in the English Units table.



# NORMALS, MEANS AND EXTREMES

YEAR 1960

State and Station	Elevation Ground (Meters)	Temperature (°C)				Precipitation (Millimeters)				Normal Heating (1941-1970)				Snow @				Relative Humidity (Percent)				Wind Speed (m.p.s.)		Annual Mean Number of Days							
		Normal (1941-1970)				Extremes				Normal (1941-1970)				Extremes				Mean Total				Sunshine (% of Possible)				Sunrise to Sunset		Thunderstorms			
		January				January				January				January				January				January				January		January		January	
		July				July				July				July				July				July				July		July		July	
		Maximum	Minimum	Record	Length (Yrs)	Record	Lowest	Record	Lowest	Record	Lowest	Record	Lowest	Record	Lowest	Record	Lowest	Record	Lowest	Record	Lowest	Record	Lowest	Record	Lowest	Record	Lowest	Record			
ALABAMA																															
BIRMINGHAM	207	12.7	2.8	32.8	67	44.4	32.8	33.4	13.9	162	65	389	121	190	36	76	213	30.8	36.8	36.1	3.8	4.5	4.2	4.2	4.2	4.2	4.2				
BIRMINGHAM	186	12.4	1.2	32.4	16.9	41.1	10.6	36.3	15.8	157	66	135.2	449	179	13	26	213	30.8	36.8	36.1	3.8	4.5	4.2	4.2	4.2	4.2	4.2				
BIRMINGHAM	193	10.4	-0.3	27.3	10.4	16.0	13	38.9	18.3	415	135.5	442	15	136.4	7	74	213	30.8	36.8	36.1	3.8	4.5	4.2	4.2	4.2	4.2	4.2				
HOUSTON	64	16.2	2.6	32.5	22.6	19.7	40.3	25.1	935	225	65	1701	490	239	8	10	79	16.6	16.6	16.6	1.0	1.0	1.0	1.0	1.0	1.0	1.0				
MONTGOMERY	50	14.4	2.8	32.5	21.9	18.2	36	40.6	115.0	309	126	57	1266	542	8	10	79	16.6	16.6	16.6	1.0	1.0	1.0	1.0	1.0	1.0	1.0				
ALASKA																															
ANCHORAGE	35	-6.7	-15.8	18.7	10.1	1.7	27	29.4	36.7	916	601	139	52	267	173	450	17.7	17.7	17.7	2.7	3.2	3.2	3.2	3.2	3.2	3.2	3.2				
ANCHORAGE	34	-3.3	-1.7	17.8	10.9	7.6	33	32.2	17.2	543	391	143	14	374	1971	361	17.7	17.7	17.7	2.7	3.2	3.2	3.2	3.2	3.2	3.2	3.2				
BARROW	922	-29.6	6.8	0.6	12.2	60	25.6	48.9	137.1	126	26	4	124	56	716	31.7	17.7	17.7	2.7	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2				
BARTER ISLAND	12	-22.5	-29.9	7.5	1.4	-12.6	30	30.4	3.3	70.0	110.7	33	6	179	125	57	17.6	17.6	17.6	2.3	3.2	3.2	3.2	3.2	3.2	3.2	3.2				
BETHEL	138	10.9	19.0	16.8	8.6	-1.8	22	30.3	156.7	102.2	73.3	101	11	402	148	1	51	11.2	11.2	11.2	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
BETHEL	196	20.7	-5.5	20.1	8.6	-5.9	30	33.3	156.7	134.7	88.4	7	16	360	150	0	49	2.7	2.7	2.7	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
DELTA	386	16.4	24.6	25.4	10.0	-2.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
DELTA	386	16.4	24.6	25.4	10.0	-2.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4	9.8	-3.5	39	33.3	152.4	120.4	76.0	63	7	291	157	1	54	1.5	1.5	1.5	3.5	3.2	3.2	3.2	3.2	3.2	3.2				
FAIRBANKS	137	19.0	9.9	12.4																											



# NORMALS, MEANS AND EXTREMES

YEAR 1980

State and Station	Elevation Ground (Meters)	Temperature (°C)					Normal Heating Degree Days (1941-1970)				Precipitation (Millimeters)				Relative Humidity (Percent)				Wind Speed (m.p.s.)		Sunshine (% of Possible)		Annual Mean Number of Days								
		Normal (1941-1970)					Extremes				Normal (1941-1970)				Extremes				Snow @				Mean Speed		Sunrise to Sunset		Temperature				
		January					Record				January				January				January				Fastest Mile		Clear		Precipitation				
		Maximum	Minimum	Mean	July	Lowest	Highest	Length (Yrs)	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	
		Maximum	Minimum	Mean	July	Lowest	Highest	Length (Yrs)	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest	Lowest
CALIFORNIA																															
SAN DIEGO	1418	7.7	24.1	17.7	17.2	40	43.9	-1.7	174	837	44	T	240	193	0	78	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0	
SAN FRANCISCO	712	5.1	21.6	12.2	13.8	53	41.1	-6.7	288	1697	111	T	496	312	0	116	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0	
SAN FRANCISCO	16	13.3	7.6	17.7	11.8	13.7	44	38.3	-1.1	245	1711	115	T	525	291	0	93	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
SANTA MARIA	712	17.1	3.5	22.1	11.3	13.8	38	40.0	-6.7	250	1696	61	1	311	246	0	80	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
STOCKTON	7	11.6	2.4	3.8	14.8	15.9	21	45.6	-7.2	351	1559	74	T	360	204	0	76	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
COLORADO																															
ALAMOSA	2297	1.7	18.2	27.8	9.8	5.3	35	37.9	45.6	823	4782	30	6	176	89	0	281	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
COLORADO SPRINGS	1935	5.3	8.9	29.1	13.9	9.1	32	37.8	32.8	627	3596	70	T	400	203	0	95	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
DENVER	1610	6.4	8.8	30.8	14.8	10.1	46	40.0	34.4	604	3342	67	11	394	186	0	90	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
GRAND JUNCTION	1476	2.8	-8.6	32.9	17.9	11.5	34	40.6	30.6	661	3114	27	12	214	88	0	40	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
PUEBLO	1423	7.5	-9.6	32.8	16.4	11.6	40	41.1	35.0	601	2996	50	T	303	157	0	96	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
CONNECTICUT																															
BRIDGEPORT	2	2.7	-4.8	27.5	18.9	11.1	32	39.4	35.6	599	3034	97	65	981	450	2	308	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
HARTFORD	57	0.6	-8.8	28.9	16.2	9.5	26	38.9	32.2	692	3527	110	77	1102	555	9	308	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
DELAWARE																															
WILMINGTON	23	4.6	-4.6	29.7	18.9	12.2	33	38.9	21.1	568	2744	106	66	1022	307	4	158	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
DIST. OF COLUMBIA																															
WASHINGTON D.C.	88	5.1	-5.0	30.2	17.8	12.1	18	39.4	25.6	567	3783	109	66	1019	462	2	175	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
WASHINGTON NATIONAL	3	6.4	-2.4	31.2	20.6	14.1	39	39.4	17.2	506	2339	119	62	988	363	1	183	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
FLORIDA																															
APALACHICOLA	6	16.2	7.9	30.8	24.0	20.3	91	42.8	18.9	204	756	229	68	1453	573	0	983	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
DAYTONA BEACH	9	20.6	8.7	32.0	22.4	21.4	37	38.9	-6.1	134	498	180	33	1276	505	0	236	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
FORT MYERS	9	23.7	11.3	32.8	23.2	23.4	41	38.3	-3.3	71	254	226	33	1370	511	0	276	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
JACKSONVILLE	8	18.1	6.9	32.2	22.2	20.2	39	40.6	11.1	193	737	200	45	1384	492	0	258	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
KEY WEST INTL AP	1	24.2	18.8	31.8	26.7	25.7	28	35.0	7.8	9	36	186	39	1016	703	0	591	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
LAKELAND U	65	21.4	10.6	32.4	22.6	22.3	37	38.3	-6.7	104	377	205	41	1256	398	0	257	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
MIAMI INTL AC	2	24.2	14.8	32.4	24.2	24.2	38	36.7	-0.6	29	114	229	42	1519	620	0	412	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
ORLANDO	29	21.4	10.0	32.1	22.1	22.1	38	38.9	-6.7	109	407	211	40	1301	497	0	246	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
PEYSCOLA 1	34	16.2	6.1	32.1	23.3	20.0	17	41.1	12.2	237	877	237	80	1531	517	0	282	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
TALLAHASSEE	17	17.9	5.0	32.6	22.0	19.8	20	39.4	12.2	227	868	227	71	1564	511	0	241	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
TAMPA	6	21.4	10.1	32.3	23.2	22.3	34	36.7	-7.8	113	799	214	45	1254	523	0	308	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
WEST PALM BEACH	5	21.9	13.3	32.0	23.4	23.6	44	38.3	-2.8	46	166	250	58	1376	631	0	387	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
GEORGIA																															
ATHENS	244	11.8	0.8	31.9	20.4	16.4	89	45.0	-27.2	372	1653	145	69	1285	380	0	457	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
ATLANTA	308	10.8	0.8	33.3	20.8	16.0	32	40.6	18.3	389	1719	188	64	1228	399	0	252	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
AUGUSTA	41	14.2	1.1	32.7	21.1	17.4	30	41.7	15.0	334	1415	129	55	1083	303	0	152	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
COLUMBUS	136	14.4	2.2	32.7	21.3	17.9	35	40.0	16.1	317	1321	153	50	1294	336	0	173	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
MACON	108	14.8	2.7	33.4	21.5	18.4	32	42.2	16.1	302	1244	131	59	1129	302	0	136	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
ROME	194	11.2	-1.1	32.4	19.5	15.7	31	41.1	20.6	412	1856	157	74	1336	441	0	191	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
SAVANNAH	14	16.2	3.7	32.7	21.8	18.8	30	40.0	12.8	268	1084	200	49	1599	511	0	179	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
HAWAII																															
HILO	8	26.4	17.1	28.3	19.7	23.0	34	34.4	11.7	0	0	400	168	3393	1291	0	965	T	75	56	16	27.6	3.2	25.5	0.7	18	4	118	99	42	0
KONA	2	26.3	18.5	30.4	23.0	24.8	11	33.9	11.7	0	0	112	582	128	0	434	0	0	0												





# NORMALS, MEANS AND EXTREMES

YEAR 1980

[illegible]



# NORMALS, MEANS AND EXTREMES

YFAD 1090

[illegible]

## APR 1987

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# NORMALS, MEANS AND EXTREMES

YEAR 1980

State and Station	Elevation Ground (Meters)	Temperature (°C)				Normal Heating (1941-1970)		Extremes		Normal (1941-1970)		Precipitation (Millimeters)		Snow @		Relative Humidity (Percent)		Wind Speed (m.p.s.)		Sunshine (% of Possible)		Annual Mean Number of Days																		
		Normal (1941-1970)		July		Length (Yrs)		Record		Annual		Extremes		January		January		January		July		Sunrise to Sunset		Thunderstorms		Temperature														
		January		Daily		Minimum		Record		Wettest		Driest		Wettest		Driest		Wettest		Driest		Clear		Partly Cloudy		Snow, Sleet, Hail		Max		Min										
		Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Wettest	Driest	Wettest	Driest	Wettest	Driest	Wettest	Driest	Wettest	Driest	Wettest	Driest	Wettest	Driest	Wettest	Driest	Wettest	Driest	Wettest	Driest											
		Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily									
TEXAS																																								
HOUSTON INTERCON	29	17.0	5.3	34.3	22.7	20.5	11	41.7	-8.3	231	797	130	68	1224	366	1	207	5	10	51.86	77.23	58.963	3.7	3.020	64.067	97.10	58.105	62	37	89	26	0	7	89	26	0				
LURGOCK	997	11.9	-4.0	33.6	19.4	15.4	34	42.2	26.7	446	1969	81	12	468	225	0	145	48	264	307.72	70.74	74.759	5.5	5.131	36.378	65.02	98.60	3	45	16	79	97	1	15	79	97	1			
MIDLAND	869	14.3	-1.4	35.0	20.8	17.7	33	42.2	26.7	368	1456	55	12	347	246	0	152	73	94	173.07	74.17	70.412	4.6	4.713	35.0	66.97	102.51	2	36	15	94	65	2	36	15	94	65			
PORT ARTHUR	516	5.9	33.3	23.3	20.3	20.3	33	41.7	10.0	323	884	150	77	1399	558	0	436	1	13	112.87	70.77	74.467	5.0	5.333	14.265	92.23	49.04	6	40	83	18	0	6	40	83	18	0			
SAN ANGELO	580	15.1	0.9	36.1	22.4	19.0	33	43.9	17.2	321	1244	70	18	445	279	0	159	73	79	138.47	75.87	74.376	4.6	4.333	15	57	98.17	57	1	36	71	69	18	0	1	36	71	69	18	0
SAN ANTONIO	240	16.4	4.3	35.3	23.2	20.4	39	41.1	17.8	251	872	94	37	700	401	0	185	5	10	119.06	75.87	75.145	4.1	4.133	14.875	107.21	39.81	6	36	23	11	23	0	6	36	23	11	23	0	
VICTORIA	32	17.4	6.4	34.1	24.1	21.2	20	41.7	-8.9	207	682	117	45	871	484	0	236	1	5	70.76	76.96	75.790	4.8	4.984	3	85	181.62	89	1	48	21	0	1	48	21	0	1	48	21	0
WACO	157	14.1	2.6	35.7	23.9	19.5	38	44.4	20.6	310	1143	117	37	794	381	0	182	23	36	178.82	76.37	79.483	5.3	4.830	8	33	00.137	77	1	45	31	05	39	0	1	45	31	05	39	0
WICHITA FALLS	303	11.9	-1.4	37.3	22.4	17.8	34	42.2	20.6	405	1613	116	27	691	306	0	158	46	150	150.81	75.77	74.278	5.1	4.926	8	54	93.18	69	2	48	12	07	70	1	48	12	07	70	1	
UTAH																																								
SALT LAKE CITY	1287	3.0	-7.5	33.8	15.8	10.6	52	41.7	35.4	637	3324	54	17	385	124	0	34	279	1113	414	56.60	2420	25	55	738	57	03	109	65	15	32	7	58	12	12	7	58	12	12	7
WENDOVER	1291	2.2	-7.3	33.3	19.2	11.2	38	44.4	28.3	698	3200	19	6	124	76	0	34	6	191	216.05	75.93	76.1215	3.6	3.030	45.166	102.07	156	113	2	39	5	50	128	1	39	5	50	128	1	
VERMONT																																								
BRULINGTON	101	-3.4	-13.6	27.2	14.7	6.9	37	36.3	34.4	830	4375	94	43	827	293	0	223	475	1996	432.07	76.68	76.0594	4.3	3.532	2.2164	57.02	20	153	22	25	16	61	60	28	25	16	61	60	28	
VIRGINIA																																								
LYNCHBURG	279	7.7	-2.6	30.1	18.6	13.5	46	39.4	22.2	489	2351	103	66	972	290	0	686	142	483	340.72	75.08	76.5770	3.9	3.025	05.162	158.03	47	120	6	41	40	21	94	1	40	21	94	1		
NORFOLK	7	9.3	-0.1	30.3	19.1	15.2	32	40.0	15.0	421	1938	150	73	1135	351	9	220	216	359.15	75.98	76.5571	5.2	3.920	6.565	108.01	152	113	2	37	29	11	55	0	29	11	55	0			
PICHMOND	50	8.6	-2.4	31.2	19.7	14.3	51	40.6	28.4	474	2188	143	60	1082	479	7	223	132	371	549.15	75.98	76.5571	3.6	3.030	45.166	102.07	156	113	2	39	5	50	128	1	39	5	50	128	1	
POANOKE	350	7.6	-2.7	29.9	18.0	13.3	33	40.0	20.0	493	2393	105	63	991	247	5	163	173	422.85	75.98	76.5571	4.4	3.085	9	102.11	147	121	7	38	24	24	92	1	38	24	24	92	1		
WASHINGTON																																								
OLYMPIA	59	6.7	-0.9	25.8	9.3	10.1	14	47.8	44.4	479	3072	208	18	1289	504	0	777	226	485	521.9	75.88	76.16449	3.3	2.726	8	49	822.81	63	6	5	91	6	89	2	5	91	6	89	2	
QUILLAYUTE	55	6.7	0.7	19.8	10.2	9.3	14	35.6	13.9	453	3306	396	60	2667	707	9	121	201	457	213.09	78.39	74.7364	3.2	2.602	62.244	47	722.42	13	6	7	48	1	66	0	7	48	1	66	0	
SEATTLE EMSU U	6	7.1	1.5	24.3	13.1	11.4	47	37.8	12.2	436	2626	136	22	906	278	1	84	99	206	292	70.98	76.16449	4.5	3.720	12.466	59	782.21	58	4	7	46	3	32	0	7	46	3	32	0	
SEATTLE TACOMA	122	6.3	0.6	23.9	12.1	10.6	36	37.2	21.7	462	2880	151	18	985	328	1	87	165	353	544.97	77.38	76.16449	4.5	3.720	12.466	59	782.21	58	4	7	46	3	32	0	7	46	3	32	0	
SPOKANE	718	-0.5	-6.9	29.1	12.8	8.5	33	42.2	31.7	682	2897	63	10	442	145	5	202	462	1734	370.81	76.163925	3.3	3.172	6.402	85	891.91	113	18	11	48	20	10	5	11	48	20	10	5		
STAMPEDE PASS R	1206	-2.6	-7.3	18.6	8.3	4.0	37	35.2	29.4	722	5222	363	39	2313	773	5	202	2042	1987	9.89	79.19	76.06659	3.9	3.172	6.402	85	891.91	113	18	11	48	20	10	5	11	48	20	10	5	
WALLA WALLA U	289	4.1	-2.5	31.6	16.8	12.3	66	45.0	26.7	550	2686	53	8	407	149	0	78	203	516	356	76	34	2.3	2.435	02.385	114	871.64	106	7	11	14	36	64	2	11	14	36	64	2	
YAKIMA	321	2.4	-7.4	31.2	11.8	9.9	34	43.3	31.7	646	3338	34	4	203	106	0	40	254	630	356.87	77.08	76.3325	2.6	3.431	5	110	911.64	68	8	7	18	33	19	4	7	18	33	19	4	
WEST INDIES																																								
SAN JUAN P.R.	4	27.7	20.4	30.6	23.8	25.9	26	36.1	15.6	0	0	177	52	1502	405	11	180	0	0	0	0	0	0	4.0	4.535	86.667	58.13	94	198	0	41	0	44	0	41	0	44	0		
WEST VIRGINIA																																								
BECKLEY	763	4.4	-5.1	26.7	15.5	10.5	17	32.2	27.8	579	3119	111	63	1083	233	0	483	417	1483	351.26	79.40	76.273	4.9	3.125	9	62	962.07	161	19	45	48	4	115	4	45	48	4	115	4	
CHARLESTON	310	6.4	-3.7	29.8	17.9	12.9	33	39.9	24.4	526	2550	128	62	1035	344	2	142	267	910	401.76	76.60	76.167	3.4	2.244	6	61	131.91	151	10	44	10	20	10	1	44	10	20	10	1	
ELKINS	594	4.8	-7.1	26.8	13.9	9.8	36	35.1	30.0	603	3393	125	69	1098	264	8	82	437	1730	475.06	77.39	76.163925	3.3	3.172	6.402	85	891.91	113	18	11	48	20	10	5	11	48	20	10	5	
HUNTINGTON	252	6.1	-3.6	29.8	18.2	12.9	20	37.6	26.1	529	2569	106	53	988	235	1	108	249	663	295.78	76.59	76.06166	3.4	2.221	0	63	103.19	140	8	44	66	17	9	2	44	66	17	9	2	
PAPERSBURG U	187	5.2	-4.2	29.8	18.2	12.6	92	41.1	32.8	553	2676	109	54	976	306	2	122	188	625	465.8	76.57	76.4805267	3.2	2.339	33.262	109	103.15	141	8	44	12	22	9	2	44	12	22	9	2	
WISCONSIN																																								
GREEN BAY	198	-4.5	-13.9	27.1	14.3	6.5	31	37.2	35.0	854	4498	87	26	686	230	0	298	259	1148	259.7	70.77	76.55726	5.0	3.848	74.665	89	021.74	121	15	35	24	61	67	30	35	24	61	67	30	
LA CROSSE	158	-3.9	-13.8	28.3	16.9	9.0	30	40.0	38.3	842	4201	113	32	739	267	1	100	259	1580	397.66	77.08	76.557	3.8	3.848	74.665	89	021.74	121	15	35	24	61	67	30	35	24	61	67	30	
MADISON	202	-3.7	-13.2	27.4	14.9	7.2	41	40.0	38.3	830	4294	110	24	768	278	2	133	239	1586	467.08	77.08	76.557	5.0	3.848	74.665	89	021.74	121	15	35	24	61	67	30	35	24	61	67	30	
MILWAUKEE	205	-2.6	-11.4	26.9	15.2	7.6	40	38.3	31.1	785	4135	91	29	738	251	1	134	330	1194	444.36	77.08	76.557	5.0	3.848	74.665	89														



# NORMALS, MEANS AND EXTREMES

YEAR 1980

State and Station	Temperature (°C)												Normal Heating Degree Days (1941-1970)		Precipitation (Millimeters)						Relative Humidity (Percent)				Wind Speed (m.p.s.)		Annual Mean Number of Days																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
	Normal (1941-1970)				Extremes				Length (Yrs)	Record Highest	Record Lowest	January	Seasonal	Wettest Month	Driest Month	Wettest Month	Driest Month	Maximum In 24 Hours	January	Seasonal	Maximum In 24 Hours	Snow @		Normal (1941-1970)		January	July	January	July	Mean Speed	Fastest Mile (1.6 Kilometers)	January	July	Sunshine (% of Possible)	Clear	Partly Cloudy	Cloudy	Precipitation 25mm or More - Snow, Sleet, Hail	Thunderstorms	Heavy Fog	Temperature																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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	Daily Maximum		Daily Minimum		Daily Maximum		Daily Minimum		Annual																														Max	Min																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													

Data from airport or from airport and urban site records combined.

U indicates Urban, R indicates Rural Sites.

Data for this table are based on records through 1980 except as indicated in notes.

Date after station name indicates last year included in summarization of data.

Normal values are based on the period 1941-1970, and are means adjusted to represent observations taken at the present standard location, except that stations closed before 1971 are based on the 1931-1960 period.

Degree days are based on a daily average of 18.3°C.

For detailed periods of record see ANNUAL LOCAL CLIMATOLOGICAL DATA, 1980.

Clear Day averages 0-3 tenths sky cover, Partly Cloudy 4-7 tenths and Cloudy 8-10 tenths.

Heavy Fog includes data formerly referred to as "Dense" or "Thick".

The upper visibility limit for heavy fog is 402.3 meters.

\* Less than one-half.

B Number of days Maximum 21.1" or above (Alaskan stations).

1/ Means and extremes are from post office location through 1962.

c Relative Humidity readings 8:00 a.m. and NOON Local Time.

x Sun below horizon continuously Nov. 19 - Jan. 23.

v Sun below horizon continuously Nov. 24 - Jan. 17.

(x and v)-Yearly totals for period sun above horizon.

m Mean wind speed record for 1949-1951, 1958-1962.

g Includes all forms of frozen precipitation, except hail occurring alone.

# ELEVATIONS

State and Station			State and Station			State and Station			State and Station		
	Ft	Mtrs		FT	Mtrs		Ft	Mtrs		Ft	Mtrs
ALABAMA			IDAHO			NEVADA			TENNESSEE		
Birmingham	630	192	Boise	2868	871	Elko	5077	1547	Bristol	1525	465
Huntsville	644	196	Lewiston	1436	438	Ely	6262	1909	Chattanooga	688	210
Mobile	221	67	Pocatello	4478	1365	Las Vegas	2180	664	Knoxville	980	299
Montgomery	202	62				Reno	4400	1341	Memphis	284	87
			ILLINOIS			Winnemucca	4314	1314	Nashville	605	184
ALASKA			Chicago	357	109				Oak Ridge	914	279
Anchorage	132	40	Chicago (O'Hare)	674	205	NEW HAMPSHIRE					
Annette	110	34	Chicago (Midway)	623	190	Concord	346	105	TEXAS		
Barrow	13	4	Moline	594	181	Mt. Washington	6267	2056	Abilene	1753	534
Barter Island	50	15	Peoria	662	202				Amarillo	3604	1099
Bethel	150	46	Rockford	743	226				Austin	621	189
Bettles	672	205	Springfield	613	187	NEW JERSEY			Brownsville	20	6
Big Delta	1274	389				Atlantic City	67	20	Corpus Christi	44	13
Cold Bay	103	31	INDIANA			Newark	30	9	Dallas/Fort Worth	576	176
Fairbanks	454	138	Evansville	388	118	Trenton	U 190	58	Del Rio	1027	313
Gulkana	1579	481	Fort Wayne	828	252				El Paso	3916	1194
Homer	73	22	Indianapolis	808	246	NEW MEXICO			Galveston	U 54	16
Junesau	24	7	South Bend	773	236	Albuquerque	5314	1620	Houston Intercom	108	33
King Salmon	49	15				Clayton	4972	1515	Lubbock	3241	988
Kodiak	111	34	IOWA			Roswell	3619	1103	Midland	2862	872
Kotzebue	16	5	Burlington	702	214				Port Arthur	22	7
Mc Grath	338	103	Des Moines	963	294	NEW YORK			San Angelo	1908	582
Nome	22	7	Dubuque	1080	329	Albany	292	89	San Antonio	794	242
St. Paul Island	28	9	Sioux City	1103	336	Binghamton	1638	499	Victoria	117	36
Summit	2405	733	Waterloo	878	268	Buffalo	706	215	Waco	508	155
Talkeetna	356	180				New York	U 87	27	Wichita Falls	1030	314
Unalakleet	21	6	KANSAS			New York Kennedy AP	22	7	UTAH		
Yakutat	31	9	Concordia	1484	452	New York LaGuardia	31	U	Milford	5033	1534
			Dodge City	2592	790	Rochester	555	169	Salt Lake City	4227	1288
ARIZONA			Goodland	3688	1124	Syracuse	408	124	Wendover	4239	1292
Flagstaff	7018	2139	Topeka	885	270				VERMONT		
Phoenix	1107	337	Wichita	1340	408	NORTH CAROLINA			Burlington	340	104
Tucson	2555	779				Asheville	2170	661			
Winslow	4883	1488	KENTUCKY			Cape Hatteras	R 11	3	VIRGINIA		
Yuma	206	63	Covington	877	267	Charlotte	769	234	Lynchburg	937	286
ARKANSAS			Lexington	989	301	Greensboro	886	270	Norfolk	30	9
Fort Smith	463	141	Louisville	488	149	Raleigh	441	134	Richmond	177	54
Little Rock	265	81	LOUISIANA			Wilmington	38	12	Roanoke	1176	358
CALIFORNIA			Alexandria	118	36				WASHINGTON		
Bakersfield	492	150	Baton Rouge	76	23	NORTH DAKOTA			Olympia	200	61
Bishop	4145	1263	Lake Charles	32	10	Bismarck	1660	506	Quillayute	205	62
Blue Canyon	5283	1610	New Orleans	30	9	Fargo	899	274	Seattle-Tacoma	450	137
Eureka	U 60	18	Shreveport	259	79	Williston	1905	581	Seattle	28	9
Fresno	327	100	MAINE						Spokane	2365	721
Long Beach	40	12	Caribou	628	191	OHIO			Stampede Pass	R 3967	1209
Los Angeles	104	32	Portland	63	19	Akron	1236	377	Walla Walla	U 891	302
Los Angeles	U 512	156				Cincinnati Abbe Ob.	627	191	Yakima	1066	325
Mt. Shasta	R 3587	1093	MARYLAND			Cleveland	805	245			
Oakland	7	2	Baltimore	155	47	Columbus	833	254			
Red Bluff	353	108				Dayton	1003	306			
Sacramento	25	U	MASSACHUSETTS			Mansfield	1312	400			
Sandberg	R 4523	1379	Blue Hill Obs.	R 640	195	Toledo	692	211	WEST INDIES		
San Diego	28	9	Boston	29	9	Youngstown	1186	361	San Juan, P. R.	62	19
San Francisco	U 155	47	Worcester	1017	310	OKLAHOMA			WEST VIRGINIA		
San Francisco	18	5				Oklahoma City	1304	397	Beckley	2514	766
Santa Maria	238	73	MICHIGAN			Tulsa	676	206	Charleston	951	290
Stockton	27	8	Alpena	693	211	OREGON			Elkins	1997	608
COLORADO			Detroit	626	191	Astoria	22	7	Huntington	838	255
Alamosa	7541	2298	Detroit Metro.	664	202	Burns	U 4170	1271	Parkersburg	U 637	194
Colorado Springs	6170	1881	Flint	766	233	Eugene	373	114	WISCONSIN		
Denver	5332	1625	Grand Rapids	803	245	Meacham	4056	1236	Green Bay	702	214
Grand Junction	4839	1475	Houghton Lake	1160	354	Medford	1329	405	LaCrosse	672	205
Pueblo	4720	1439	Lansing	U 874	266	Pendleton	1495	456	Madison	866	264
CONNECTICUT			Marquette	734	224	Portland	39	12	Milwaukee	693	211
Bridgeport	17	5	Muskegon	633	193	Salem	201	61			
Hartford	179	55	Sault Ste. Marie	724	221	Sexton Summit	R 3841	1171	WYOMING		
DELAWARE			MINNESOTA						Casper	5290	1612
Wilmington	80	24	Duluth	1417	432	PACIFIC AREA			Cheyenne	6141	1872
DISTRICT OF COLUMBIA			International Falls	1183	361	Guam Taguac	R 365	111	Lander	5558	1694
Wash. Dulles Int. AP	323	98	Minneapolis	838	255	Johnston	R 109	33	Sheridan	3968	1209
Wash. Nat'l AP	65	20	Rochester	1320	402	Kwajalein	26	8			
FLORIDA			St. Cloud	1043	318	Majuro	10	3			
Apalachicola	U 35	11	MISSISSIPPI			Pago Pago	10	3			
Daytona Beach	41	12	Jackson	331	101	Ponape	R 151	46			
Fort Myers	12	4	Meridian	310	94	Truk Moen Island	8	2			
Jacksonville	31	9	MISSOURI			Wake Island	12	4			
Key West	21	6	Columbia, Regional	898	274	Yap	R 56	17			
Lakeland	U 236	72	Kansas City	750	229	PENNSYLVANIA					
Miami	12	4	St. Joseph	817	249	Allentown	385	117			
Orlando	119	36	St. Louis	564	172	Erie	737	225			
Pensacola	118	36	Springfield	1270	387	Harrisburg	351	107			
Tallahassee	68	21	MONTANA			Philadelphia	28	9			
Tampa	11	3	Billings	3570	1088	Pittsburgh	1225	373			
West Palm Beach	21	6	Glasgow	2298	700	Scranton	U 1017	334			
GEORGIA			Great Falls	3657	1115	Williamsport	525	160			
Athens	811	247	Harve	2599	792	RHODE ISLAND					
Atlanta	1034	315	Helena	3898	1188	Block Island	118	36			
Augusta	148	45	Kalispell	2973	906	Providence	62	19			
Columbus	394	120	Miles City	2634	803						
Macon	362	110	Missoula	3189	972	SOUTH CAROLINA					
Rome	643	196	NEBRASKA			Charleston	48	15			
Savannah	51	16	Grand Island	1856	566	Columbia	225	69			
HAWAII			Lincoln	1189	362	Grnvl-Spartanburg	971	296			
Hilo	36	11	Norfolk	1551	473						
Honolulu	15	5	North Platte	2787	849	SOUTH DAKOTA					
Kahului	67	20	Omaha	982	299	Aberdeen	1300	396			
Lihue	148	45	Scottsbluff	3958	1206	Huron	1289	393			
			Valentine	2598	792	Rapid City	3168	966			
						Sioux Falls	1427	435			

Data from airport unless otherwise specified. U indicates Urban, R indicates Rural, sites.

These are the elevations of the barometer (in feet and meters above mean sea level) to which station pressure values pertain in the

"Climatological Data" table in the monthly publication CLIMATOLOGICAL DATA NATIONAL SUMMARY.

# GENERAL SUMMARY OF TORNADES , 1980

HENRY N. VIGANSKY

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

ENVIRONMENTAL DATA AND INFORMATION SERVICE

NATIONAL CLIMATIC CENTER

During 1980, 866 tornadoes were reported in the United States. They occurred on 176 days, killed 28 people, injured 1,158 others and caused property losses in excess of 500 million dollars. Twenty tornadoes caused the 28 deaths. This fatality count tied the second lowest total since 1916. Tornadoes damaged or destroyed approximately 1,400 mobile homes during 1980, with 311 associated injuries and 11 deaths.

New monthly records by state, location of killer tornadoes, and state to state border crossings are shown in the following three tables:

## NEW MONTHLY TORNADO RECORDS

<u>MONTH</u>	<u>STATE</u>	<u>NEW RECORD</u>	<u>PREVIOUS RECORD</u>
February	California	3	2 (1978)
May	Georgia	10	9 (1976)
	Montana	4	3 (1977)
June	Pennsylvania	9	8 (1954)
July	Tennessee	4	2 (1967)
	West Virginia	4	1 (1979)
	Wisconsin	16	14 (1966)
August	Texas	34	20 (1971)
October	Arkansas	4	2 (1970)
	Mississippi	10	8 (1970)
	Nebraska	8	4 (1956)

## KILLER TORNADES

<u>DATE</u>	<u>STATE</u>	<u>COUNTY</u>	<u>TOTAL DEATHS</u>
March 1	Florida	Broward	1
20	Mississippi	Clay	1
April 7	Texas	Williamson	1
8	Kentucky	McCreary	2
25	Mississippi	Simpson	1
May 6	Louisiana	Pointe Coupee	1
13	Michigan	Kalamazoo	5
15	Louisiana	Franklin	1
30	Indiana	Porter	1
June 2	Indiana	Montgomery	1
3	Nebraska	Hall	3
3	Nebraska	Hall	1
3	Nebraska	Hall	1
7	Indiana	Tipton	1
July 9	Indiana	Rush	2
15	Wisconsin	Dunn	1
15	Wisconsin	Chippewa	1
15	Wisconsin	Eau Claire	1
September 3	Minnesota	Stearns	1
October 17	Arkansas	Drew	1



# GENERAL SUMMARY OF TORNADOES

## STATE BORDER CROSSINGS

<u>DATE</u>	<u>STATE</u>		<u>STATE</u>
April 8	Kentucky	into	Ohio
May 29	Wyoming	into	Colorado
June 3	West Virginia	into	Maryland
August 5	Oklahoma	into	Kansas

Some of the significant tornadoes are described briefly in the following paragraphs:

On January 11th, at 1:45 p.m., the first tornado of the season touched down briefly in Perrysburg, Ohio. The tornado partially destroyed the Ace Hardware Distribution Center and overturned two tractor trailers.

At 9:00 p.m., on March 1st, a huge tornado touched down just south of Fort Lauderdale Executive Airport and moved northeastward through Pompano Beach, Florida. A woman was killed when blown off the balcony of her 6th floor condominium. Thirty-three injuries were reported, seven people required hospitalization. The tornado caused more than 6 million dollars damage to homes, condominiums, businesses, schools and automobiles. At about the same time another destructive tornado struck Deerfield Beach, Florida. Damage to businesses, homes, condominiums, and cars was estimated at 750 thousand dollars.

On April 7th during the early evening hours, 12 tornadoes left 109 miles (175.4 km) of devastation through Central Arkansas. The Arkansas Power and Light Company reported over 6.5 million dollars damage to 17 major transmission lines, 80 large steel transmission towers and 100 wooden structures. Over 5 million dollars worth of timber was destroyed. The tornadoes caused another 8 million dollars damage to homes, farm buildings, businesses, public buildings, railroad cars and a nursing home. Hail as large as baseballs was reported in numerous areas. One hundred and five people were injured; most of the injuries occurred when one of the tornadoes destroyed a major portion of the Clarksville Nursing Home. Nineteen counties were declared state disaster areas, and the President declared five of the counties a national disaster area.

At 8:10 a.m., on April 13th a tornado touched down in the downtown area of Gulfport, Mississippi, causing about 10 million dollars damage. The twister destroyed 35 houses, 5 mobile homes, 70 apartment units, 36 businesses, 19 cars and 7 boats. Damage included 592 houses, 19 mobile homes, 13 apartment units, 376 businesses, 212 cars, 23 boats, 7 airplanes and the control tower located at the Gulfport Regional Airport. Twenty-four people were injured.

Downtown Kalamazoo, Michigan, was razed by a tornado on May 13th, which caused an estimated 40 million dollars property damage. The tornado struck during the evening rush hour killing five people, leaving 79 injured and 1,200 homeless. Two churches, 47 houses, two factories and 22 businesses were demolished. The storm also caused extensive damage to 1,000 houses, 156 business establishments, four factories and five public buildings.

On June 3rd, between the hours of 7:30 p.m. and 10:30 p.m., seven tornadoes caused widespread havoc from four miles (6.4 km) northwest of Grand Island to just south of Phillips, Nebraska. Heaviest destruction was concentrated in the Grand Island area; 700 businesses and homes were destroyed and 3,000 businesses and homes were damaged. The storms were responsible for five deaths and 200 injuries. Hail caused extensive crop damage on forty farms northeast of Grand Island, Nebraska.

At 9:35 p.m., on July 9th a tornado touched down two miles (3.2 km) west of Rushville, Indiana and proceeded on an east-southeast course for eight miles (12.9 km), and then made an abrupt 120° right turn to the south and continued moving south to one mile (1.6 km) southwest of Salem, Indiana. Damage to homes and commercial buildings was estimated at 2.5 million dollars and 180,000 dollars damage to crops. As a result of the storm there were two fatalities and 25 injuries.

Between 8:45 p.m., and 11:07 p.m., on July 15th, eleven tornadoes touched down in five west central Wisconsin counties, causing considerable damage. Three people lost their lives and 25 were injured.

During the period August 9th through August 11th, Hurricane Allen spawned 29 tornadoes which affected 20 southern Texas counties. Damage caused by the tornadoes was estimated to be in excess of 50 million dollars. Thirty people were injured and fortunately no fatalities were recorded.

On the 3rd of September, at 6:36 p.m., a tornado touched down 5 miles (8.0 km) southwest of Saint Cloud, Minnesota and moved into the northeastern section of the city. One person was killed and 15 people were injured. Damage was extensive and included the following: Twenty-seven mobile homes, 231 houses and 16 apartment complexes were destroyed.

A tornado touched down 1 1/2 miles (2.4 km) north of Lacey, Arkansas, on October 17th, and blew a tractor trailer truck and two pickups off of Arkansas Highway 81. One pickup was lifted into the air and carried

## GENERAL SUMMARY OF TORNADOES

for 600 yards (549 km) prior to being slammed into the ground, killing the lone occupant. The two people in the other pickup were injured. A home and several farm buildings were damaged.

The 1980 tornado season ended on December 7, at 5:55 p.m., when a mini tornado touched down in Spur, Texas. The tornado traveled through the southeast section of town destroying several cotton trailers and storage barns.

Additional information is presented in the following tables and charts. Over the years, the continuing efforts of the National Severe Storms Forecast Center, Weather Service Forecast Offices and the National Climatic Center have resulted in several corrections to the previous tables.

More detailed information about tornadic activity can be obtained from the monthly Storm Data publications. The National Severe Storms Forecast Center has developed a magnetic tape containing tornado statistics for the period 1950-1980. A copy of this tape can be obtained by contacting the National Climatic Center, Federal Building, Asheville, North Carolina, 28801.

# TORNADO SUMMARY 1980

STATE	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANN
ALABAMA Number Days Deaths Injuries			6 3 11	9 4 14	7 4 1	2 2			2 2				27 16 0 26
ALASKA (None)													
ARIZONA Number Days Deaths Injuries					1 1								1 0 0
ARKANSAS Number Days Deaths Injuries				16 2 106			1 1		1 1 7	4			22 5 113
CALIFORNIA Number Days Deaths Injuries	2 2 1	3 3 2		1 1 2	1 1		1 1						8 0 3
COLORADO Number Days Deaths Injuries			1 1	1 1	8 6	9 5	2 2	3 3		1 1			25 19 0 0
CONNECTICUT (None)													
DELAWARE (None)													
DISTRICT OF COLUMBIA (None)													
FLORIDA Number Days Deaths Injuries	2 1	3 3	6 3 1	5 4 10	13 6 6	12 8 2	6 5 1	6 5 3	2 3 3	2 1 1			60 40 1 56
GEORGIA Number Days Deaths Injuries			6 2 3	12 5 7	10 4 2	2 2	1 1 1						32 15 0 12
HAWAII Number Days Deaths Injuries			1 1										1 1 0 0
IDAHO Number Days Deaths Injuries							1 1						1 1 0 0
ILLINOIS Number Days Deaths Injuries				2 1	3 2	3 2 7							14 8 0 7
INDIANA Number Days Deaths Injuries				6 1	1 1	24 6 38	3 3 28						35 12 5 66
IOWA Number Days Deaths Injuries					9 2	14 7	7 3	3 2	6 2	1 1			40 17 0 8
KANSAS Number Days Deaths Injuries					12 3 1		2 2	1 1		4 2 4			19 8 0 5
KENTUCKY Number Days Deaths Injuries				4 1 13		1 1	6 3 1		1 1				12 6 2 14
LOUISIANA Number Days Deaths Injuries				2 2 2	5 2 5			1 1		4 3 4			16 12 2 11
MAINE (None)													
MARYLAND Number Days Deaths Injuries				1 1		2 1 14							3 2 0 14
MASSACHUSETTS (None)													
MICHIGAN Number Days Deaths Injuries				3 2	5 2	4 3	4 3	1 1	2 1				19 12 5 97
MINNESOTA Number Days Deaths Injuries					4 2	5 3	2 2	1 1	4 1 1				16 9 1 16
MISSISSIPPI Number Days Deaths Injuries													
MISSOURI Number Days Deaths Injuries				9 3 18	7 3 30	2 2				10 2 8			32 12 2 54
MONTANA Number Days Deaths Injuries													10 2 0 48



# TORNADO SUMMARY 1980

STATE	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANN
NEBRASKA Number Days Deaths Injuries					10 3 5 2	16 6 5 202	1 1 5 2	3 2 5 2		8 2			38 14 5 204
NEVADA (None)													
NEW HAMPSHIRE Number Days Deaths Injuries							1 1	1 1					1 1 0 0
NEW JERSEY Number Days Deaths Injuries						1 1							1 1 0 0
NEW MEXICO Number Days Deaths Injuries				1 1	1 1			1 1					3 3 0 0
NEW YORK Number Days Deaths Injuries					2 2	2 2							4 4 0 0
NORTH CAROLINA Number Days Deaths Injuries	3 2	1 1	2 2	3 2	3 2	1 1	2 2	1 1		1 1			14 12 0 1
NORTH DAKOTA Number Days Deaths Injuries					3 2	19 5	4 3	3 2					29 12 0 0
OHIO Number Days Deaths Injuries	1 1			12 2 23	2 2	11 4	7 4	2 2					35 15 0 57
OKLAHOMA Number Days Deaths Injuries			3 2	7 4 15	9 5 2	1 1		2 2	2 2 3				25 17 0 20
OREGON (None)													
PACIFIC (None)													
PENNSYLVANIA Number Days Deaths Injuries			1 1	1 1	3 2	9 4	2 2	1 1					17 11 0 141
PUERTO RICO (None)													
RHODE ISLAND (None)													
SOUTH CAROLINA Number Days Deaths Injuries			1 1 6	1 1 5	5 32 2	1 2 1	1 1 1						38 14 5 204
SOUTH DAKOTA Number Days Deaths Injuries					15 2	32 8	4 4	1 1					52 15 0 0
TENNESSEE Number Days Deaths Injuries			2 2 2	4 1 1	2 2 3	3 2 12	6 3 12	1 1 1		2 1 1			18 11 0 18
TEXAS Number Days Deaths Injuries		2 2	7 3	26 5 10	44 13 8	21 8 2	2 2 1	34 8 31	10 5 1	5 3 1			152 50 1 53
UTAH (None)													
VERMONT (None)													
VIRGINIA Number Days Deaths Injuries				3 3 1	1 1 1	1 1 1							6 6 0 1
VIRGIN ISLANDS (None)													
WASHINGTON Number Days Deaths Injuries					1 1			1 1					2 2 0 0
WEST VIRGINIA Number Days Deaths Injuries													
WISCONSIN Number Days Deaths Injuries													
WYOMING Number Days Deaths Injuries													
UNITED STATES Number Days Deaths Injuries	5 4 1	11 9 2	41 15 57	137* 16 280	203* 25 202	217* 30 461	95 26 78	73* 27 55	37 14 16	43 7 26	3 2 1	1 1 1	866* 136 28 1156

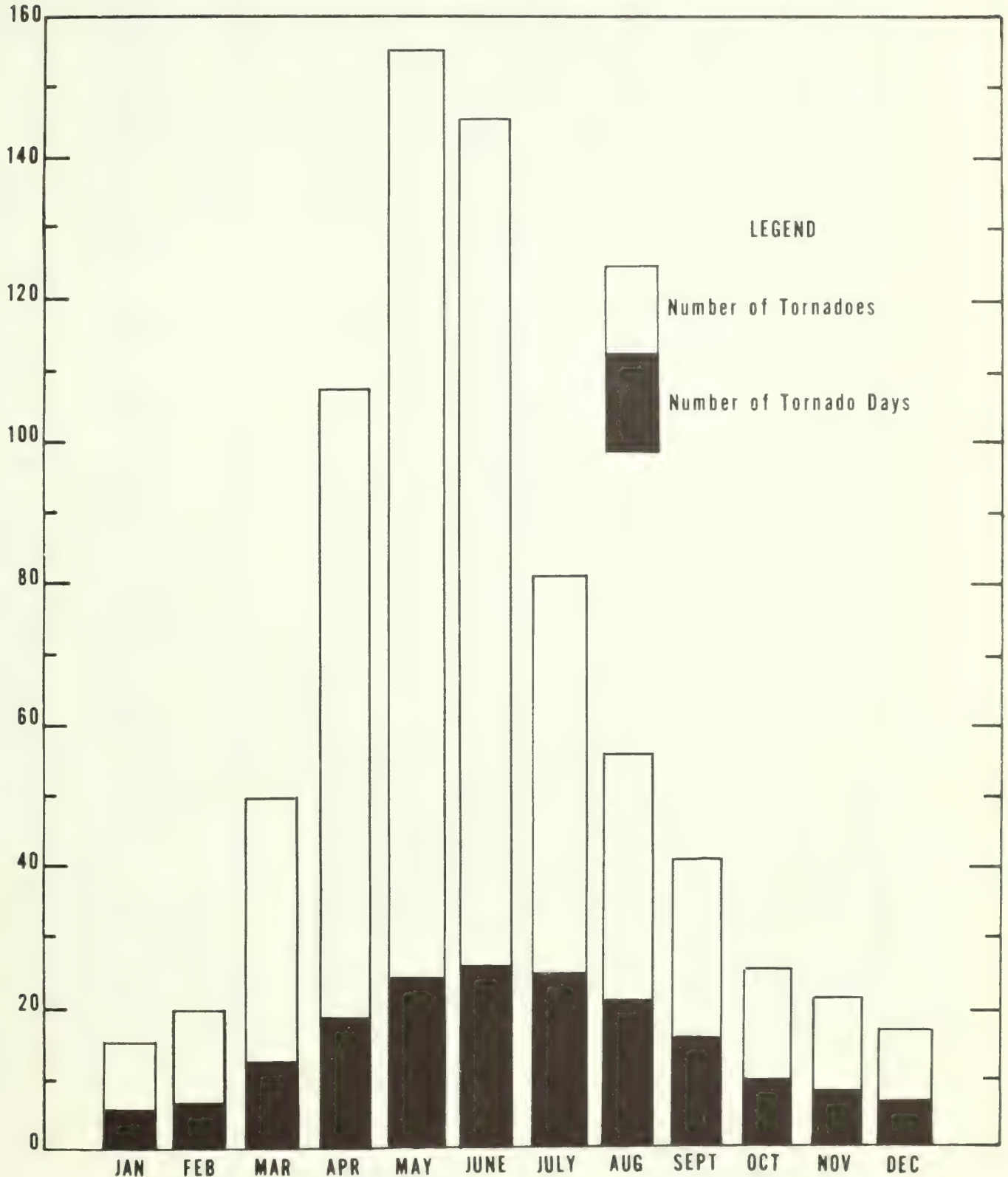
\* Corrected for boundary-crossing tornadoes.  
+ Tornado Days for Country as a whole.

NUMBER OF TORNADES, TORNADO DAYS, AND DEATHS BY MONTHS, 1953- 1980

YEAR	JANUARY			FEBRUARY			MARCH			APRIL			MAY			JUNE			JULY			AUGUST			SEPTEMBER			OCTOBER			NOVEMBER			DECEMBER			ANNUAL				
	NUMBER	DAYS	DEATHS	NUMBER	DAYS	DEATHS	NUMBER	DAYS	DEATHS	NUMBER	DAYS	DEATHS	NUMBER	DAYS	DEATHS	NUMBER	DAYS	DEATHS	NUMBER	DAYS	DEATHS	NUMBER	DAYS	DEATHS	NUMBER	DAYS	DEATHS	NUMBER	DAYS	DEATHS	NUMBER	DAYS	DEATHS	NUMBER	DAYS	DEATHS					
1953	14	6	0	16	3	3	47	16	34	94	21	161	111	24	244	31	19	0	24	15	0	5	4	0	6	4	0	12	6	0	21	8	49	421	136	515					
1954	2	1	0	17	9	2	112	22	3	101	22	9	107	26	5	45	23	0	49	21	1	21	10	3	14	8	2	2	2	0	17	3	1	550	160	36					
1955	3	2	0	4	3	0	99	18	7	147	26	103	154	28	2	49	21	5	33	18	0	15	8	2	23	7	1	20	4	1	3	2	0	593	152	126					
1956	2	2	0	47	12	8	85	15	67	79	24	4	65	21	0	91	26	1	43	20	2	16	10	0	29	8	0	7	6	0	9	4	0	504	155	83					
1957	17	3	13	5	3	0	216	21	29	227	26	87	147	25	14	55	19	0	20	14	0	17	10	2	18	11	2	58	11	25	38	4	19	856	154	192					
1958	12	7	0	20	5	13	15	10	9	68	21	0	127	27	42	121	30	1	46	20	1	24	14	1	9	6	4	45	6	0	1	1	0	564	166	66					
1959	16	2	3	20	5	21	43	11	9	30	12	226	28	8	73	25	2	63	20	1	58	15	14	24	10	0	11	4	0	2	2	0	604	156	58						
1960	9	4	0	28	10	0	88	10	0	70	20	7	201	26	34	43	22	0	47	18	0	22	13	0	18	10	1	25	6	0	1	1	0	616	172	46					
1961	1	1	0	31	8	0	124	17	7	74	19	3	137	25	23	77	27	0	27	16	0	53	16	15	14	5	0	36	7	1	16	5	0	697	169	51					
1962	12	3	1	25	7	0	37	9	17	41	8	1	200	22	3	78	26	0	51	21	6	24	11	0	11	10	0	5	4	0	2	2	0	657	152	28					
1963	15	5	1	6	3	0	48	12	8	84	14	16	71	21	1	62	26	0	26	13	2	33	13	3	13	5	0	15	6	0	0	0	0	464	141	31					
1964	14	3	10	2	2	0	36	11	6	157	23	15	135	20	16	63	23	0	79	23	2	25	10	0	22	4	22	17	8	0	18	5	2	704	156	73					
1965	21	11	0	32	4	0	34	9	2	129	20	264	275	25	17	86	26	0	61	23	1	64	21	0	16	4	1	34	6	5	7	4	0	906	181	296					
1966	1	1	0	28	5	0	12	6	58	80	20	12	98	17	0	126	28	19	100	27	3	58	21	0	22	13	0	29	6	6	20	3	0	585	150	98					
1967	39	4	7	8	5	0	42	14	3	149	18	73	116	25	3	210	28	6	28	16	2	139	16	5	36	7	4	8	5	0	61	10	10	926	173	114					
1968	5	3	0	7	3	0	28	8	0	102	15	40	145	26	72	56	22	2	66	23	2	25	14	0	14	9	0	44	12	3	32	9	1	660	171	131					
1969	3	1	32	5	5	0	8	2	1	68	15	2	145	25	4	137	28	7	69	21	19	20	11	0	26	10	0	5	3	0	23	7	1	608	155	66					
1970	9	5	0	16	3	0	25	12	2	117	16	29	88	19	26	81	26	3	55	21	0	54	20	0	50	13	6	10	4	0	14	8	0	653	171	72					
1971	18	7	1	83	12	131	40	13	2	75	14	11	166	24	7	199	28	1	50	21	0	47	15	0	38	12	0	16	7	0	56	9	2	888	192	156					
1972	33	10	5	7	4	0	69	17	0	96	20	16	140	27	0	114	25	2	59	23	2	49	19	0	34	10	0	17	4	2	8	6	0	741	194	27					
1973	33	7	1	10	4	0	80	16	17	150	22	10	250	26	35	224	26	0	51	23	4	69	22	3	25	11	0	81	11	12	49	12	3	1102	206	87					
1974	24	8	2	23	9	0	36	12	1	269	22	313	144	28	10	194	26	31	59	19	0	107	26	0	25	11	0	45	10	4	8	5	0	947	184	361					
1975	52	7	12	45	12	7	84	16	12	108	20	13	188	30	5	196	28	6	60	25	2	34	17	0	12	7	0	40	8	0	22	8	1	920	204	60					
1976	12	5	0	37	6	5	180	18	21	113	23	1	155	24	8	169	26	3	38	18	1	35	15	3	11	5	0	0	0	0	1	1	0	835	169	44					
1977	5	4	0	17	3	2	64	15	0	88	15	26	228	29	4	132	27	0	82	26	6	65	21	1	25	5	1	24	10	0	23	7	2	852	189	43					
1978	23	7	2	6	3	0	17	8	0	107	17	4	213	27	7	148	28	17	65	24	1	20	10	6	7	5	0	9	5	0	30	9	5	788	173	53					
1979	16	9	0	4	3	0	53	13	1	120	17	58	112	23	2	150	24	8	132	30	1	68	19	2	47	12	7	21	8	0	2	1	0	852	186	84					
1980	5	4	0	11	9	0	41	15	2	137	16	4	203	25	8	217	30	7	95	26	5	37	14	1	43	7	1	3	2	0	1	1	0	866	176	28					
53-80																																									
TOTAL	416	132	90	560	160	192	1359	326	210	2999	497	1063	4352	682	657	4046	733	446	2276	710	39	1532	587	60	1086	392	61	659	221	62	598	166	49	476	137	56	20359	4743	3025		
MEAN	15	5	3	20	6	7	49	12	8	107	18	38	155	24	23	145	26	16	81	25	1	55	21	2	39	14	2	24	8	2	21	6	2	17	5	3	727	169	108		

# AVERAGE NUMBER OF TORNADOES AND TORNADO DAYS EACH MONTH IN THE UNITED STATES

(BASED ON 20,359 TORNADOES THAT OCCURRED FROM 1953 - 1980)





# NUMBER OF TORNADES, TORNADO DAYS, DEATHS, AND RESULTING LOSSES BY YEARS, 1916-80

YEAR	Number Tornadoes	Tornado Days	Total Deaths	Most Deaths in Single Tornado	Total Property Losses †	PROPERTY LOSS FREQUENCY*		
						Category 5	Category 6	Category 7 and Over
1916	90	36	150	30	6	7	1	0
1917	121	38	551	101	7	21	9	0
1918	81	45	136	36	7	20	5	0
1919	64	35	206	59	7	10	2	0
1920	87	50	499	87	7	14	10	0
1921	105	55	202	61	7	22	3	0
1922	108	64	135	16	7	27	5	0
1923	102	59	110	23	6	21	1	0
1924	130	57	376	85	7	26	11	1
1925	119	65	794	689	7	34	2	1
1926	111	57	144	23	6	28	0	0
1927	163	62	540	92	7	42	9	1
1928	203	79	95	14	7	40	7	0
1929	197	74	274	40	7	48	4	0
1930	192	72	179	41	7	38	6	0
1931	94	57	36	6	6	14	1	0
1932	151	67	394	37	7	23	1	1
1933	258	96	362	34	7	46	9	0
1934	147	77	47	6	6	10	3	0
1935	180	77	71	11	6	29	0	0
1936	151	71	552	216	7	17	5	1
1937	147	75	29	5	6	24	0	0
1938	213	76	183	32	7	29	6	0
1939	152	75	91	27	7	21	3	0
1940	124	62	65	18	7	13	2	0
1941	118	57	53	25	6	24	1	0
1942	167	66	384	65	7	42	10	0
1943	152	61	58	5	7	28	8	0
1944	169	68	275	100	7	50	9	0
1945	121	66	210	69	7	21	10	1
1946	106	65	78	15	7	29	7	0
1947	165	78	313	169	7	46	7	1
1948	183	68	139	33	7	62	11	2
1949	249	80	211	58	7	54	13	0
1950	200	88	70	18	7	47	9	0
1951	262	113	34	6	7	35	11	2
1952	240	98	229	57	7	53	19	0
1953	421	136	515	116	8	63	18	7
1954	550	160	36	6	7	63	8	1
1955	593	152	126	80	7	74	13	1
1956	504	155	83	25	7	83	24	1
1957	856	154	192	44	8	129	26	3
1958	564	166	66	19	7	70	8	1
1959	604	156	58	21	7	70	4	1
1960	616	172	46	16	7	65	11	1
1961	697	169	51	16	7	103	21	1
1962	657	152	28	17	7	51	10	0
1963	464	141	31	5	7	77	15	1
1964	704	156	73	22	7	113	17	5
1965	906	181	296	44	8	126	30	11
1966	585	150	98	58	8	79	13	4
1967	926	173	114	33	8	125	33	8
1968	660	171	131	34	8	82	26	6
1969	608	155	66	32	8	98	16	3
1970	653	171	72	26	8	97	24	6
1971	888	192	156	58	8	71	30	5
1972	741	194	27	6	8	100	28	1
1973	1102	206	87	7	9	219	67	9
1974	947	184	361	34	9	166	82	25
1975	920	204	60	9	9	189	31	11
1976	835	169	44	5	8	145	41	5
1977	852	189	43	22	8	173	40	6
1978	788	173	53	16	9	153	53	6
1979	852	186	84	42	9	169	62	11
1980	866	176	28	5	9	201	79	13
Means: 1953-80	727	169	108	---	---	113	30	5

NOTE: -- The above estimated losses are based on values at time of occurrence.

† Storm damages in categories:

5. \$50,000 to \$500,000

6. \$500,000 to \$5 million

7. \$5 million to \$50 million

8. \$50 million to \$500 million

9. \$500 million and over

\*Number of times property losses reported in Storm Data in Categories 5, 6, 7 and over.

# NUMBER OF TORNADES, TORNADO DAYS, AND DEATHS BY STATES, 1953-80

STATE	TORNADES							DAYS		DEATHS		
	TOTAL	AVER AGE	GREAT EST	YEAR	LEAST	YEAR	Per. # 10,000 Sq. Mi.	TOTAL	AVER AGE	TOTAL	AVER AGE	Per. # 10,000 Sq. Mi.
Alabama	563	20	45	1973+	5	1956	3.90	307	11	202	7	39
Alaska	1	0	1	1959	0	1980+	.00	1	0	0	0	0
Arizona	100	4	17	1972	0	1965+	.31	83	3	3	0	0
Arkansas	571	20	50	1973	2	1969	3.84	283	10	122	4	23
California	96	3	13	1978	0	1968+	.22	72	3	0	0	0
Colorado	460	16	42	1976	1	1959	1.58	303	11	2	0	0
Connecticut	41	1	8	1973	0	1980+	2.92	37	1	4	0	8
Delaware	26	1	5	1975	0	1980+	4.51	24	1	0	0	0
District of Columbia	0	0	0	-	0	1980+	.00	0	0	0	0	0
Florida	1155	41	97	1975	10	1956	7.04	737	26	52	2	9
Georgia	594	21	46	1971+	7	1960	3.60	341	12	72	3	12
Hawaii	17	1	4	1971	0	1978+	.95	14	1	0	0	0
Idaho	37	1	5	1967	0	1977	.16	29	1	0	0	0
Illinois	750	27	107	1974	4	1953	4.75	350	13	129	5	23
Indiana	638	23	48	1973	6	1972+	6.28	302	11	205	7	56
Iowa	766	27	54	1964	7	1956	4.86	356	13	54	2	10
Kansas	1212	43	97	1955	14	1976	5.26	563	20	162	6	20
Kentucky	226	8	34	1974	0	1953	2.00	127	5	101	4	25
Louisiana	546	20	55	1974	3	1955	4.02	346	12	88	3	18
Maine	70	3	11	1971	0	1980+	.75	62	2	1	0	0
Maryland	78	3	10	1975	0	1970+	2.63	62	2	1	0	1
Massachusetts	107	4	12	1958	0	1959	4.63	77	3	99	4	120
Michigan	443	16	39	1974	2	1959	2.72	258	9	231	8	40
Minnesota	469	17	34	1968	5	1972	1.99	282	10	74	3	9
Mississippi	612	22	44	1973	1	1979	4.58	323	12	316	11	66
Missouri	758	27	79	1973	6	1953	3.88	361	13	120	4	17
Montana	116	4	13	1978	0	1974+	.28	86	3	0	0	0
Nebraska	985	35	78	1975	10	1966	4.56	485	17	49	2	6
Nevada	18	1	4	1964	0	1980+	.06	17	1	0	0	0
New Hampshire	60	2	9	1963	0	1979+	2.30	54	2	0	0	0
New Jersey	44	2	8	1973	0	1978+	2.01	36	1	0	0	0
New Mexico	232	8	18	1972	0	1953	.68	175	6	3	0	0
New York	100	4	8	1978	0	1953	.72	85	3	2	0	0
North Carolina	328	12	38	1973	2	1970	2.22	209	7	22	1	4
North Dakota	473	17	52	1976	2	1961	2.39	271	10	21	1	3
Ohio	402	14	43	1973	3	1976	3.48	218	8	147	5	36
Oklahoma	1477	53	105	1957	21	1978	7.54	630	23	177	6	25
Oregon	24	1	3	1975+	0	1980+	.09	20	1	0	0	0
Pacific	1	0	1	1975	0	1980+	--	1	0	0	0	0
Pennsylvania	218	8	23	1976	0	1959	1.72	156	6	8	0	2
Puerto Rico	9	0	2	1979+	0	1980+	.94	8	0	0	0	0
Rhode Island	1	0	1	1972	0	1980+	.29	1	0	0	0	0
South Carolina	255	9	23	1973	1	1970+	2.93	175	6	24	1	8
South Dakota	683	24	64	1965	1	1958	3.17	335	12	8	0	1
Tennessee	316	11	44	1974	1	1962	2.67	172	6	74	3	18
Texas	3344	119	232	1967	32	1953	4.47	1372	49	371	13	14
Utah	32	1	5	1970+	0	1980+	.13	25	1	0	0	0
Vermont	24	1	5	1962	0	1980+	.89	21	1	0	0	0
Virginia	162	6	22	1975	1	1963	1.42	113	4	16	1	4
Virgin Islands	2	0	1	1979+	0	1980+	--	2	0	0	0	0
Washington	32	1	4	1978	0	1977+	.17	26	1	6	0	1
West Virginia	60	2	6	1980+	0	1960+	.89	46	2	1	0	0
Wisconsin	514	18	43	1980	0	1960+	3.27	288	10	56	2	10
Wyoming	253	9	42	1979	0	1970	.92	179	6	2	0	0
TOTAL: United States	*20359	727	1102	1973	421	1953	2.01	† 4743	169	2325	83	6

+ Also in earlier year(s).

\* Corrected for boundary-crossing tornadoes.

† Tornado Days for Country as a whole.

# Mean annual tornadoes per 10,000 square miles.

@ Number of deaths per 10,000 square miles.

# NUMBER OF FUNNEL CLOUDS 1980

STATE	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANN
Alabama			1	2	7	4			3				17
Alaska						1							1
Arizona	3			1									4
Arkansas				11	4		3			1			19
California		5	2	1		1				1			10
Colorado					1								1
Connecticut													0
Delaware													0
District of Columbia													0
Florida					30	26	22	20	5	9			112
Georgia			1		2	2							5
Hawaii								1	1				2
Idaho					2								2
Illinois					7								7
Indiana				1	5	62	15	30	5				118
Iowa					4	3							7
Kansas					14			7		3			24
Kentucky													0
Louisiana				9	1		3						13
Maine								1					1
Maryland			1										1
Massachusetts						3							3
Michigan				1	25	19	6	3					54
Minnesota					4	15	1						20
Mississippi					1	1	1			1			4
Missouri				1		1							2
Montana						12							12
Nebraska					19	15		6					40
Nevada													0
New Hampshire													0
New Jersey													0
New Mexico			1		10			1					12
New York						4							4
North Carolina		1		4			1						6
North Dakota				1	3	20	13	9					46
Ohio						7							7
Oklahoma			1	8	25	5			1				40
Oregon											1		1
Pacific													0
Pennsylvania													0
Puerto Rico													0
Rhode Island													0
South Carolina													0
South Dakota						8		1	1				10
Tennessee	1					1							2
Texas	2	1	8	78	52	17	6	9	21				194
Utah													0
Vermont													0
Virginia													0
Virgin Islands													0
Washington					2								2
West Virginia						4	2	2					8
Wisconsin						6							6
Wyoming					25	6	6	4					41
TOTAL: United States	6	7	15	118	243	243	79	94	37	15	1	0	858



# TRACKS OF TORNADOES, 1980



LEGEND

— TORNADO TRACK  
 • LOCATION OF TORNADO TRACK  
 TOO SHORT TO INDICATE  
 - - - NON-CONTINUOUS PATH

HAWAIIAN TORNADO

# GENERAL SUMMARY OF LIGHTNING, 1980

HENRY N. VIGANSKY  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
ENVIRONMENTAL DATA AND INFORMATION SERVICE  
NATIONAL CLIMATIC CENTER

During 1980, in the United States, lightning killed 76 people and injured 274 others. Twenty-eight percent of the fatalities occurred while people were under trees; 13 percent while boating, fishing or swimming; three percent while golfing; three percent while driving tractors, farm machinery and heavy road equipment; 22 percent occurred in open fields, ball fields and play grounds; three percent while using telephones; one percent while using citizen band radios and 27 percent at various other or unknown locations.

Lightning has been responsible for 2,286 fatalities and 5,416 injuries during the period of 1959 through 1980. The following table illustrates the various locations where the fatalities and injuries occurred.

LOCATION AND PERCENTAGE FREQUENCY OF LIGHTNING DEATHS AND INJURIES  
1959 - 1980

<u>LOCATIONS</u>	<u>PERCENTAGE FREQUENCY</u>	
	<u>DEATHS</u>	<u>INJURIES</u>
Open fields, ball fields, etc.	26	27
Under trees	15	13
Boating, fishing and water related	12	6
Golfing	5	5
Tractors and heavy road equipment	6	2
Telephones	1	3
Citizen band radios, etc.	0*	1
Various other or unknown locations	35	43
TOTALS	100%	100%

\*Indicates less than one percent.

Some of the more significant lightning incidents are described briefly in the following annual summary.

March -- Lightning struck an elementary school and four homes in Bloomington, Minnesota, causing \$152,000 damage. In Mabank, Texas, lightning caused \$25,000 damage to oil storage tanks. Minor damage was caused by lightning to an elementary school in Houston, Texas.

April -- The Benton Academy, located in Benton, Mississippi, was struck by lightning causing \$115,000 damage. The 120 students were evacuated without incident. A warehouse and contents valued at \$450,000 was destroyed by lightning in Hammond, Louisiana.

May -- A private residence valued at \$250,000 was destroyed by lightning in Coral Springs, Florida. Lightning caused \$180,000 damage to the Royal Arms Apartments, located in Gulfport, Mississippi. Oil tanks were destroyed by lightning in Elbert, Plains, and Trent, Texas; loss of property and oil was estimated to be in excess of \$275,000.

June -- According to the Associated Press, Mr. Edwin P. Robinson, of Falmouth, Maine, was struck by lightning which restored his eyesight. He was blind and partially deaf as a result of a truck accident in 1971. In Roanoke, Virginia, three people were injured by lightning while flying a kite during a thunderstorm (yes, flying a kite). A 28 year-old woman died a week after the incident. In Bridgeport, Maine, lightning struck a 69,000 volt transmission line leaving the residents without electricity for over five hours. The Sequoyah Nuclear Plant near Soddy-Daisy, Tennessee, was struck by lightning shattering a circuit breaker and strewn the pieces across the 161,000 volt switchyard.

July -- In Bronford, Florida, a large brooder house was struck by lightning. The brooder house sustained major damage and 11,000 chickens were killed. Two large oil storage tanks were destroyed by lightning in Circle, Montana. Damage was estimated to be in excess of \$50,000.

August -- In New York City, lightning struck the New York Institute of Technology causing approximately one million dollars damage. In Scotsburg, Indiana, lightning destroyed three business establishments valued at \$600,000.

September -- Lightning destroyed elementary schools in Boykin, Alabama, and Sulphur, Oklahoma.

## GENERAL SUMMARY OF LIGHTNING

Additional lightning information is presented in the following tables.

More detailed information about lightning data can be obtained from the monthly Storm Data publications. The National Climatic Center has lightning data on magnetic tape for the period 1959-1980. The tape contains the date/time (year, month, day and hour), location (state and county), number of fatalities, number of injuries, and amount of property damage. A copy of this tape can be obtained by contacting the National Climatic Center, Federal Building, Asheville, North Carolina 28801.



# LIGHTNING FATALITIES, 1980

STATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
----	---	---	---	---	---	---	---	---	---	---	---	---	---
ALABAMA	0	0	0	0	0	0	2	1	0	0	0	0	3
ALASKA	0	0	0	0	0	0	0	0	0	0	0	0	0
ARIZONA	0	0	0	0	0	0	0	0	0	0	0	0	0
ARKANSAS	0	0	0	0	0	1	1	0	0	0	0	0	2
CALIFORNIA	0	0	0	0	0	0	1	0	0	0	0	0	1
COLORADO	0	0	0	0	0	0	1	0	0	0	0	0	1
CONNECTICUT	0	0	0	0	0	0	0	0	1	0	0	0	1
DELAWARE	0	0	0	0	0	1	0	0	0	0	0	0	1
DISTRICT OF COLUMBIA	0	0	0	0	0	0	0	0	0	0	0	0	0
FLORIDA	0	0	0	0	0	2	0	2	0	0	0	0	4
GEORGIA	0	0	0	0	0	0	1	0	0	0	0	0	1
HAWAII	0	0	0	0	0	0	0	0	0	0	0	0	0
IDAHO	0	0	0	0	0	0	0	0	0	0	0	0	0
ILLINOIS	0	0	0	0	0	0	0	0	0	0	0	0	3
INDIANA	0	0	0	0	0	0	0	2	0	0	0	0	5
IOWA	0	0	0	0	0	0	0	0	0	0	0	0	0
KANSAS	0	0	0	0	0	0	0	0	0	0	0	0	0
KENTUCKY	0	0	0	0	0	0	2	0	0	0	0	0	4
LOUISIANA	0	0	0	0	0	1	1	0	0	0	0	0	2
MAINE	0	0	0	0	0	0	1	0	0	0	0	0	1
MARYLAND	0	0	0	0	0	0	0	0	0	0	0	0	0
MASSACHUSETTS	0	0	0	0	0	0	0	0	0	0	0	0	2
MICHIGAN	0	0	0	0	0	1	1	2	2	0	0	0	6
MINNESOTA	0	0	0	0	0	0	1	0	0	0	0	0	1
MISSISSIPPI	0	0	0	0	1	0	0	2	0	0	0	0	3
MISSOURI	0	0	0	0	0	0	0	0	0	0	0	0	0
MONTANA	0	0	0	0	0	1	0	0	0	0	0	0	1
NEBRASKA	0	0	0	0	0	0	1	0	0	0	0	0	1
NEVADA	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW HAMPSHIRE	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW JERSEY	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW MEXICO	0	0	0	0	0	0	0	1	0	0	0	0	1
NEW YORK	0	0	0	0	0	0	0	2	0	0	0	0	2
NORTH CAROLINA	0	0	0	0	0	1	2	1	0	0	0	0	4
NORTH DAKOTA	0	0	0	0	0	0	0	0	0	0	0	0	0
OHIO	0	0	0	0	0	0	4	3	0	0	0	0	7
OKLAHOMA	0	0	0	0	0	1	0	1	0	0	0	0	2
OREGON	0	0	0	0	0	0	0	0	0	0	0	0	0
PENNSYLVANIA	0	0	0	0	0	0	0	0	0	0	0	0	0
PUERTO RICO	0	0	0	0	0	0	0	0	0	0	0	0	0
RHODE ISLAND	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH CAROLINA	0	0	0	0	0	0	1	0	1	0	0	0	2
SOUTH DAKOTA	0	0	0	0	0	0	0	0	0	0	0	0	0
TENNESSEE	0	0	0	0	0	0	2	1	0	0	0	0	3
TEXAS	0	0	0	0	4	0	0	0	1	1	0	0	6
UTAH	0	0	0	0	0	0	0	1	0	0	0	0	1
VERMONT	0	0	0	0	0	0	0	1	0	0	0	0	1
VIRGINIA	0	0	0	0	0	1	1	0	0	0	0	0	2
WASHINGTON	0	0	0	0	0	0	0	0	0	0	0	0	0
WEST VIRGINIA	0	0	0	0	0	0	2	0	0	0	0	0	2
WISCONSIN	0	0	0	0	0	0	0	0	0	0	0	0	0
WYOMING	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	7	16	27	20	5	1	0	0	76

# LIGHTNING INJURIES, 1980

STATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
ALABAMA	0	0	0	0	0	2	0	0	0	0	0	0	2
ALASKA	0	0	0	0	0	0	0	0	0	0	0	0	0
ARIZONA	0	0	0	0	0	0	0	1	0	0	0	0	1
ARKANSAS	0	0	0	0	0	0	0	0	0	0	0	0	0
CALIFORNIA	0	0	0	0	0	0	0	0	0	0	0	0	0
COLORADO	0	0	0	0	0	5	0	0	0	0	0	0	5
CONNECTICUT	0	0	1	0	0	0	0	0	2	0	0	0	3
DELAWARE	0	0	0	0	0	1	0	0	0	0	0	0	1
DISTRICT OF COLUMBIA	0	0	0	0	0	0	0	0	0	0	0	0	0
FLORIDA	0	0	1	9	0	6	4	13	0	0	0	0	36
GEORGIA	0	0	0	0	0	0	0	0	0	0	0	0	0
HAWAII	0	0	0	0	0	0	0	0	0	0	0	0	0
IDAH0	0	0	0	0	0	0	1	0	0	0	0	0	1
ILLINOIS	0	0	0	0	0	0	0	0	0	0	0	0	0
INDIANA	0	0	0	0	0	1	0	5	0	0	0	0	6
IOWA	0	0	0	0	0	0	0	0	0	0	0	0	0
KANSAS	0	0	0	0	0	0	0	0	0	0	0	0	0
KENTUCKY	0	0	0	0	0	0	3	0	0	0	0	0	3
LOUISIANA	0	0	0	0	0	0	1	0	0	0	0	0	1
MAINE	0	0	0	0	0	0	0	3	0	0	0	0	3
MARYLAND	0	0	0	0	0	1	1	2	0	0	0	0	4
MASSACHUSETTS	0	0	0	0	0	0	7	2	3	0	0	0	12
MICHIGAN	0	0	0	1	1	8	5	2	0	0	0	0	17
MINNESOTA	0	0	0	0	0	0	1	0	0	0	0	0	1
MISSISSIPPI	0	0	0	0	0	0	0	5	0	0	0	0	5
MISSOURI	0	0	0	0	0	0	0	0	0	0	0	0	0
MONTANA	0	0	0	0	0	1	0	0	0	0	0	0	1
NEBRASKA	0	0	0	0	1	0	0	1	0	0	0	0	2
NEVADA	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW HAMPSHIRE	0	0	0	0	0	0	0	1	0	0	0	0	1
NEW JERSEY	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW MEXICO	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW YORK	0	0	0	0	0	3	3	11	4	0	0	0	21
NORTH CAROLINA	0	0	0	0	0	3	0	3	0	0	0	0	6
NORTH DAKOTA	0	0	0	0	0	0	0	0	0	0	0	0	0
OHIO	0	0	0	0	0	1	5	43	0	0	0	0	49
OKLAHOMA	0	0	0	0	0	2	0	0	2	0	0	0	4
OREGON	0	0	0	0	0	0	0	0	0	0	0	0	0
PENNSYLVANIA	0	0	0	0	0	7	5	5	0	0	0	0	17
PUERTO RICO	0	0	0	0	0	0	0	0	0	0	0	0	0
RHODE ISLAND	0	0	0	0	0	0	0	4	0	0	0	0	4
SOUTH CAROLINA	0	0	0	0	0	0	3	3	1	0	0	0	7
SOUTH DAKOTA	0	0	0	0	0	0	0	0	0	0	0	0	0
TENNESSEE	0	0	0	0	0	1	1	5	0	0	0	0	7
TEXAS	0	1	0	0	5	0	2	0	3	1	0	0	11
UTAH	0	0	0	0	0	0	0	0	0	0	0	0	0
VERMONT	0	0	0	0	0	0	0	1	0	0	0	0	1
VIRGINIA	0	0	0	1	0	2	3	0	0	0	0	0	6
WASHINGTON	0	0	0	0	0	0	0	0	0	0	0	0	0
WEST VIRGINIA	0	0	0	0	0	0	4	20	0	0	0	0	24
WISCONSIN	0	0	0	0	0	0	1	1	0	0	0	0	2
WYOMING	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	1	2	11	11	49	50	134	15	1	0	0	274

# TOTAL LIGHTNING FATALITIES BY STATE FOR PERIOD, 1959-80

STATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
-----	---	---	---	---	---	---	---	---	---	---	---	---	---
ALABAMA	0	0	2	2	4	15	20	12	1	1	0	0	57
ALASKA	0	0	0	0	0	0	0	0	0	0	0	0	0
ARIZONA	0	0	0	0	1	1	12	11	6	0	0	0	31
ARKANSAS	0	0	8	0	10	27	20	15	3	0	0	0	83
CALIFORNIA	0	0	0	0	0	2	2	5	3	0	0	0	12
COLORADO	0	0	0	0	6	8	27	11	0	1	0	0	53
CONNECTICUT	0	0	0	0	0	3	5	3	1	0	0	0	12
DELAWARE	0	0	0	0	0	2	3	3	0	0	0	0	8
DISTRICT OF COLUMBIA	0	0	0	0	0	1	1	1	0	0	0	0	3
FLORIDA	0	0	3	3	17	59	62	52	28	2	1	1	227
GEORGIA	0	0	2	3	4	15	20	8	2	1	0	0	55
HAWAII	0	0	0	0	0	0	0	0	0	0	0	0	0
IDAHO	0	0	0	1	1	5	5	5	1	0	0	0	18
ILLINOIS	0	0	0	3	7	21	12	10	7	2	0	0	62
INDIANA	0	0	1	2	6	20	15	12	4	2	0	0	62
IOWA	0	0	1	3	9	14	6	11	4	4	0	0	52
KANSAS	0	0	0	3	8	5	10	6	4	1	1	0	38
KENTUCKY	1	0	0	2	7	15	15	7	10	0	0	0	57
LOUISIANA	0	0	1	5	6	17	29	12	10	0	1	1	82
MAINE	0	0	0	0	0	3	4	6	0	3	0	0	16
MARYLAND	0	0	0	0	0	5	5	6	1	0	0	81	98
MASSACHUSETTS	0	0	0	1	3	2	5	7	1	0	0	0	19
MICHIGAN	0	0	0	0	6	17	15	17	5	0	0	0	60
MINNESOTA	0	0	0	2	2	6	5	10	8	1	0	0	34
MISSISSIPPI	1	0	4	0	10	7	17	17	4	0	0	0	60
MISSOURI	0	0	5	4	17	17	10	7	3	1	0	0	64
MONTANA	0	0	0	0	2	7	6	1	0	0	0	0	16
NEBRASKA	0	0	0	1	3	12	7	5	4	0	0	0	32
NEVADA	0	0	0	0	0	1	0	2	0	0	0	0	3
NEW HAMPSHIRE	0	0	0	0	0	3	1	0	0	0	0	0	4
NEW JERSEY	0	0	0	1	2	5	16	14	3	0	0	0	41
NEW MEXICO	0	0	0	1	3	8	17	21	3	0	0	0	53
NEW YORK	0	0	0	0	5	18	38	23	4	2	0	0	90
NORTH CAROLINA	0	1	3	2	18	23	38	30	2	0	0	0	117
NORTH DAKOTA	0	0	0	0	0	4	3	3	0	0	0	0	10
OHIO	0	0	0	3	6	15	37	14	7	2	1	0	85
OKLAHOMA	0	1	1	9	11	10	7	14	11	2	1	0	67
OREGON	0	0	0	0	1	0	0	1	2	0	0	0	4
PENNSYLVANIA	0	1	0	0	7	24	26	24	6	1	0	0	89
PUERTO RICO	0	0	0	0	0	3	2	4	5	3	0	0	17
RHODE ISLAND	0	0	0	0	0	0	1	0	2	0	0	0	3
SOUTH CAROLINA	0	0	1	0	5	9	24	8	4	0	0	0	51
SOUTH DAKOTA	0	0	0	0	2	1	4	0	3	2	0	0	12
TENNESSEE	0	1	1	4	12	20	14	12	11	2	2	0	88
TEXAS	0	0	0	9	24	10	35	21	12	5	1	0	117
UTAH	0	0	0	0	0	5	1	4	2	0	0	0	12
VERMONT	0	0	0	0	0	4	5	4	0	0	0	0	13
VIRGINIA	0	0	0	0	9	5	8	8	2	0	0	0	32
WASHINGTON	0	0	0	0	0	1	0	0	0	0	0	0	1
WEST VIRGINIA	0	0	0	0	4	2	8	2	1	0	0	0	17
WISCONSIN	0	0	0	0	0	8	11	7	2	1	0	1	30
WYOMING	0	0	0	0	2	3	7	5	2	0	0	0	19
TOTAL	2	4	33	64	240	496	641	481	194	39	8	64	2286



# TOTAL LIGHTNING INURIES BY STATE FOR PERIOD, 1959-80

STATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
ALABAMA	6	1	6	2	1	12	40	27	0	2	0	0	97
ALASKA	0	0	0	0	0	0	0	0	0	0	0	0	0
ARIZONA	2	0	0	0	6	1	22	16	12	0	0	0	59
ARKANSAS	1	2	2	9	22	14	28	45	9	0	0	0	132
CALIFORNIA	0	0	0	0	0	0	6	7	1	0	0	1	15
COLORADO	0	0	0	0	8	20	39	35	4	0	0	0	115
CONNECTICUT	0	0	1	0	3	14	10	10	6	0	0	0	44
DELAWARE	0	0	0	0	1	9	0	1	2	0	0	0	13
DISTRICT OF COLUMBIA	0	0	0	0	0	4	1	1	0	0	1	0	7
FLORIDA	0	1	12	11	22	142	146	148	107	12	0	1	602
GEORGIA	0	0	2	2	12	37	78	29	3	5	0	0	168
HAWAII	0	0	0	0	0	0	0	0	0	0	0	0	0
IDAHO	0	0	0	1	6	15	13	15	4	1	0	0	55
ILLINOIS	0	0	0	2	12	37	22	25	9	1	0	0	108
INDIANA	0	0	0	4	16	31	26	21	1	0	0	0	99
IOWA	0	0	1	5	21	39	32	15	16	2	1	0	132
KANSAS	0	0	4	9	10	18	35	18	20	4	1	0	119
KENTUCKY	0	0	0	2	17	45	45	13	10	1	0	0	133
LOUISIANA	1	0	6	2	12	8	82	32	13	0	1	1	158
MAINE	0	0	0	0	3	5	17	46	0	0	1	0	72
MARYLAND	0	0	0	0	14	15	23	15	3	0	0	0	70
MASSACHUSETTS	0	0	1	11	8	30	96	60	24	4	2	1	237
MICHIGAN	0	0	1	8	32	120	60	176	18	6	0	0	421
MINNESOTA	0	0	0	0	6	17	12	13	5	3	0	0	56
MISSISSIPPI	1	2	3	2	10	8	90	30	6	1	1	1	155
MISSOURI	0	1	1	8	12	16	4	13	3	2	0	0	60
MONTANA	0	0	0	0	5	9	10	6	0	0	0	0	30
NEBRASKA	0	0	0	2	10	6	7	10	5	0	0	0	40
NEVADA	0	0	0	0	0	0	0	2	0	0	0	0	2
NEW HAMPSHIRE	0	0	0	0	2	17	3	1	2	0	0	0	25
NEW JERSEY	0	0	0	0	3	11	48	18	14	0	0	0	94
NEW MEXICO	0	0	0	1	17	8	28	14	6	0	0	0	74
NEW YORK	0	0	0	0	4	45	63	87	20	3	1	0	223
NORTH CAROLINA	0	2	8	12	37	50	66	69	17	2	1	0	264
NORTH DAKOTA	0	0	0	0	1	0	0	3	2	0	0	0	6
OHIO	0	0	0	1	13	34	35	83	40	3	0	0	209
OKLAHOMA	0	1	3	12	24	36	30	30	18	2	5	1	162
OREGON	0	0	0	0	2	2	0	9	3	0	0	0	16
PENNSYLVANIA	0	5	0	0	9	66	65	124	10	2	0	0	281
PUERTO RICO	0	0	0	0	0	0	1	0	2	1	0	0	4
RHODE ISLAND	0	2	0	0	1	5	3	10	2	0	1	0	24
SOUTH CAROLINA	0	0	0	1	15	5	68	15	14	0	0	0	118
SOUTH DAKOTA	0	0	0	1	2	12	4	5	1	0	0	0	25
TENNESSEE	0	1	4	2	22	28	55	30	16	4	0	0	162
TEXAS	0	2	3	26	39	30	30	33	21	6	2	0	192
UTAH	0	0	0	0	1	18	1	6	4	0	0	0	30
VERMONT	0	0	0	0	0	3	10	2	0	0	0	0	15
VIRGINIA	0	0	0	2	4	12	35	21	0	0	0	0	74
WASHINGTON	0	0	0	0	4	1	5	7	0	0	0	0	17
WEST VIRGINIA	0	0	0	0	0	2	22	25	1	1	0	0	51
WISCONSIN	0	1	2	2	4	19	28	9	6	1	1	0	73
WYOMING	0	0	0	0	4	32	16	20	6	0	0	0	78
TOTAL	11	21	60	140	477	1117	1560	1450	486	69	19	6	5416

# LIGHTNING FATALITIES AND INJURIES BY YEAR, 1959-80

## LIGHTNING FATALITIES

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
----	---	---	---	---	---	---	---	---	---	---	---	---	---
1959	1	0	1	4	18	25	50	39	13	7	0	0	158
1960	0	0	1	5	7	33	25	17	9	0	0	0	97
1961	0	0	1	2	9	23	47	20	10	1	0	0	113
1962	0	0	3	6	27	20	26	28	9	1	0	0	120
1963	0	0	4	3	11	37	42	20	10	2	0	81	210
1964	0	0	9	6	15	21	29	19	7	1	1	0	108
1965	0	0	2	4	12	34	39	28	4	2	0	0	125
1966	0	0	1	1	8	15	21	16	11	3	0	0	76
1967	1	0	1	2	3	26	21	14	1	2	1	1	73
1968	0	0	0	1	5	24	30	29	9	3	1	1	103
1969	0	0	1	5	13	17	27	13	14	3	0	0	93
1970	0	0	0	1	17	25	27	19	21	1	0	0	111
1971	0	0	2	1	12	27	33	19	19	0	0	0	113
1972	0	0	1	1	5	21	31	28	3	1	0	0	91
1973	0	1	2	3	10	24	31	18	13	2	1	0	105
1974	0	2	0	7	12	21	28	24	6	0	2	0	102
1975	0	1	3	3	11	19	28	18	6	2	0	0	91
1976	0	0	0	1	9	19	19	19	3	2	0	0	72
1977	0	0	0	4	9	19	16	35	14	1	0	0	98
1978	0	0	1	1	9	26	24	22	3	1	0	1	88
1979	0	0	0	3	11	4	20	16	4	3	2	0	63
1980	0	0	0	0	7	16	27	20	5	1	0	0	76
TOTAL	2	4	33	64	240	496	641	481	194	39	8	84	2286
AVERAGE	0	0	2	3	11	23	29	22	9	2	0	4	104

## LIGHTNING INJURIES

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
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1959	0	0	0	5	27	52	110	103	23	3	1	1	325
1960	0	0	2	11	12	70	28	50	16	9	4	0	202
1961	0	0	7	14	15	49	83	50	31	5	1	1	256
1962	0	0	3	5	39	38	90	49	12	6	0	0	242
1963	7	0	0	6	14	64	55	44	18	1	0	0	209
1964	0	0	10	15	14	38	99	53	8	1	1	0	239
1965	3	2	2	4	26	42	59	59	19	1	0	0	217
1966	0	2	1	2	37	39	42	44	15	1	0	0	183
1967	0	0	0	4	7	35	59	33	4	2	0	1	145
1968	0	0	4	2	16	52	117	155	14	9	1	0	370
1969	0	0	0	4	19	75	39	23	12	0	0	1	173
1970	0	0	1	5	40	40	82	43	43	4	1	0	259
1971	0	1	0	1	24	71	79	54	22	1	1	0	254
1972	0	0	8	6	12	24	72	54	24	2	1	0	203
1973	0	0	10	2	20	23	74	59	29	9	2	0	228
1974	1	9	1	3	12	27	56	51	12	1	0	0	173
1975	0	3	0	1	30	60	107	154	42	1	0	1	309
1976	0	1	0	7	16	39	73	68	14	1	0	1	220
1977	0	0	0	3	35	58	58	67	62	4	4	0	291
1978	0	0	5	3	19	100	73	54	42	5	0	0	301
1979	0	2	4	26	32	72	55	49	9	2	2	0	253
1980	0	1	2	11	11	49	50	134	15	1	0	0	274
TOTAL	11	21	60	140	477	1117	1560	1450	486	69	19	6	5416
AVERAGE	1	1	3	6	22	51	71	66	22	3	1	0	246

## HAILSTORMS LOSSES FOR PAST YEARS

Year	Property (exclusive of crops)	Crops	Total	Year	Property (exclusive of crops)	Crops	Total
1933	-	-	7	1959	6	7	7
1934	-	-	7	1960	7	8	8
1935	-	-	7	1961	8	8	8
1936	6	7	7	1962	9	8	8
1937	6	7	7	1963	8	8	8
1938	6	7	7	1964	8	8	8
1939	5	6	6	1965	8	8	8
1940	6	7	7	1966	8	8	8
1941	6	7	7	1967	8	8	8
1942	6	7	7	1968	8	8	8
1943	6	7	7	1969	8	8	8
1944	7	7	8	1970	8	8	8
1945	6	7	7	1971	7	8	8
1946	7	7	7	1972	7	7	8
1947	6	8	8	1973	7	7	8
1948	7	8	8	1974	7	8	8
1949	7	7	7	1975	7	7	8
1950	7	7	7	1976	7	8	8
1951	7	7	8	1977	7	8	8
1952	7	7	7	1978	8	8	8
1953	7	7	7	1979	7	8	8
1954	7	8	8	1980	-	-	-
1955	7	7	8				
1956	7	8	8				
1957	7	8	8				
1958	7	8	8				

† Storm damages are placed in categories varying from 1 to 9 as follows:

1 Less than \$50	4 \$5,000 to \$50,000	7 \$5 million to \$50 million
2 \$50 to \$500	5 \$50,000 to \$500,000	8 \$50 million to \$500 million
3 \$500 to \$5,000	6 \$500,000 to \$5 million	9 \$500 million to \$5 billion

NOTE.--The above estimated losses are based on values at time of occurrence.

## WINDSTORM LOSSES PAST YEARS

(Windstorms other than tornadoes)

Year	Total loss of life	Total property loss	Year	Total loss of life	Total property loss
1916	65	7	1951	289	8
1917	25	6	1952	137	8
1918	79	7	1953	118	8
1919	344	7	1954	292	9
1920	42	6	1955	301	8
1921	65	7	1956	196	8
1922	133	7	1957	553	8
1923	68	7	1958	129	8
1924	78	7	1959	145	7
1925	88	7	1960	85	8
1926	357	8	1961	64	8
1927	64	7	1962	134	9
1928	1,947	8	1963	54	9
1929	46	7	1964	64	9
1930	49	7	1965	107	9
1931	17	7	1966	74	8
1932	306	7	1967	48	8
1933	156	8	1968	49	8
1934	109	7	1969	194	9
1935	461	7	1970	64	8
1936	121	7	1971	76	8
1937	43	7	1972	103	8
1938	630	8	1973	80	9
1939	60	6	1974	30	8
1940	251	7	1975	103	8
1941	43	7	1976	127	8
1942	68	7	1977	65	8
1943	61	7	1978	71	8
1944	448	8	1979	61	8
1945	85	7			
1946	70	7			
1947	117	8			
1948	52	8			
1949	102	8			
1950	210	8			

† Storm damages are placed in categories varying from 1 to 9 as follows:

1 Less than \$50	4 \$5,000 to \$50,000	7 \$5 million to \$50 million
2 \$50 to \$500	5 \$50,000 to \$500,000	8 \$50 million to \$500 million
3 \$500 to \$5,000	6 \$500,000 to \$5 million	9 \$500 million to \$5 billion

NOTE.--The above estimated losses are based on values at time of occurrence.



# NORTH ATLANTIC TROPICAL CYCLONES, 1980

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and  
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Hurricane activity in the Atlantic began and ended late this year. Hurricane Allen formed on August 1 and hurricane Karl died on November 27. Records show that the median starting and ending dates for hurricane activity are June 26 and October 29, respectively. This was the first year since 1932 in which two hurricanes formed in November. During this century, Jeanne was the only November storm to strengthen into a hurricane in the Gulf of Mexico, and Karl was the only late November storm observed so far east in the Atlantic.

There were 11 named storms in 1980, 9 of which became hurricanes. This compares with the corresponding long-term averages of 10 and 6. The nine hurricanes resulted in a total of 38 hurricane-days; the average is 26. Eight of the hurricanes spent their entire lives at sea. Only Allen and tropical storms Danielle and Hermine made landfall. Allen accounted for the entire death toll of the season and all but a small fraction of the damage. Storm tracks and statistics are given in Figure 1 and table 1, respectively. Tables 2 and 3 list tropical cyclones for past years.

Allen also proved to be the storm with the greatest impact on marine interests, judging by the number of reports received at the National Hurricane Center from ships encountering gale-force winds. Not surprisingly, Allen, which was a hurricane for 14 days, accounted for 35% of the total of 192 such reports. However, Jeanne, which maintained hurricane strength for only 30 hr, accounted for 28% of the gale reports. Also, hurricanes in the Gulf of Mexico represented only 8% of the total hurricane-days, yet 52% of the gale reports were received from that area. This reflects, to some degree, the concentration of shipping in the Gulf of Mexico. Only one ship reported encountering hurricane-force winds in Allen compared to three in Jeanne and seven in Frances.

## HURRICANE ALLEN - AUGUST 1-11

The first hurricane of the year proved to be the second strongest Atlantic hurricane on record in terms of its minimum central pressure. Only the famous "Labor Day Hurricane," which struck the Florida Keys in 1935 with a central pressure of 892 mb, had a lower pressure than the 899-mb measured by an Air Force reconnaissance flight in Allen on August 9.

Allen formed from a tropical wave which moved off the west coast of Africa on July 29. It became a tropical storm in the central Atlantic less than 100 mi from the location where

disastrous hurricane David became a storm a year earlier. The two storms followed similar tracks across the ocean and into the eastern Caribbean Sea. However, Allen crossed the Lesser Antilles to the south of David's track, brushing the northern part of Barbados and raking the southern tip of St. Lucia. Winds reached 90 kn on St. Lucia, where the hurricane caused six deaths and damages amounting to \$235 million.

Crossing the northern Caribbean Sea, the eye of the hurricane struck a glancing blow on Haiti, then skirted Jamaica, the Cayman Islands, and the Yucatan Peninsula. Haiti was the hardest hit, with a reported death toll of 220, hundreds of thousands homeless, and hundreds of millions of dollars in damage.

As Allen traversed the Caribbean Sea, reports were received that the GEORGIOS G., a Panamanian ship enroute from Santo Domingo to Belize with 27 persons aboard, was lost in the storm. A Coast Guard search found an inflated liferaft with the ship's name about 100 mi south of Haiti. No further details are available, and possible fatalities from this incident are not included in the season totals.

Allen entered the Gulf of Mexico on August 7 and continued on a west-northwest course toward the lower Texas coast. During its entire history, Allen moved on a remarkably steady heading, deviating only slightly from a predominantly west-northwest course. However, in many cases these deviations were timely, sparing many locations from the full brunt of the hurricane's core. Thus, Jamaica, the Cayman Islands, Yucatan, and, to a lesser extent, Haiti all received damage but escaped the potential devastation that a direct hit might have caused. Upon approaching Texas, the eye of Allen jogged slightly to the north, crossing Padre Island and the mainland coast over a relatively undeveloped and thinly populated section. Nevertheless, Allen was severe enough to cause an estimated \$300 million in damage and two deaths in Texas. Two offshore oil rigs in the Gulf of Mexico were destroyed. Thirteen persons died in a helicopter crash during the evacuation of an oil rig. There were at least a dozen tornadoes in Texas and rainfall amounts up to 20 in deluged a swath across the southern part of the state. Approximately one-half million persons evacuated the Texas and Louisiana coasts as Allen approached.

Although Allen's track was remarkably steady, such was not the case with the strength of the hurricane. A plot of the central pressure with time shows three distinct strengthening-weakening cycles. During each cycle, the pressure changed by about 50 mb, or 50% of the total range of

## NORTH ATLANTIC TROPICAL CYCLONES

observed central pressures in hurricanes. Such a pattern of intensity fluctuations is unprecedented in hurricane records, and is not well understood. During the second strengthening cycle, the pressure dropped to 899 mb as Allen passed through the Yucatan Channel and entered the Gulf of Mexico. After a rise of about 50 mb, the pressure plunged once more, this time reaching 909 mb--a minimum exceeded only three previous times in hurricanes, including Allen's earlier 899-mb low.

Allen got the 1980 hurricane season off to an awesome start, but did not prove to be an indication of things to come. No other hurricane of the year even came close to Allen's strength, nor did any of the subsequent hurricanes affect any land areas.

### HURRICANE BONNIE - AUGUST 14-19

An elongated cloud mass near the Cape Verde Islands developed two centers of action on August 13. Satellite pictures suggested that the more westward of the two systems became a tropical depression by 0000 on August 14. At 1545, the RUDDBANK passed through the system and reported winds of Force 8 (fresh gale) and a pressure fall of 7.2 mb in 1.5 hr to 1003.2 mb. At 1700 the ship's pressure fell to 999.9 mb, and at 1714 the winds increased to Force 9 (strong gale). Upon receipt of these reports at the National Hurricane Center, the depression was upgraded to tropical storm Bonnie.

Bonnie strengthened to a minimal hurricane by August 16, while its companion system formed a tropical depression centered only 400 mi to the northeast of Bonnie's center. However, the depression dissipated and Bonnie tracked steadily northward for more than 1,000 mi before losing tropical characteristics midway between Newfoundland and the Azores on August 19.

Following the reports from the RUDDBANK, no other ship observations were received from the vicinity of Bonnie, but, based on estimates from satellite images, Bonnie's winds never exceeded 85 kn.

### HURRICANE CHARLEY - AUGUST 20-25

Charley initially developed as a subtropical depression in a cool environment to the north of a front off the mid-Atlantic coast on August 20. During the following 3 days, the system described a counterclockwise loop while gradually gaining strength. When the center was about midway between Bermuda and Nova Scotia on August 22, the ALGENIB passed just to the north and reported winds of 60 kn and a pressure of 999.5 mb at 1200. The TOZUI MARU encountered 50-kn winds and a pressure of 1005 mb 100 mi northwest of the center.

During this period the storm gradually acquired the structure of a tropical cyclone and winds reached the threshold of hurricane force.

On August 23 a reconnaissance flight found winds of 70 kn and a surface pressure of 989 mb, which is the maximum strength attained by the hurricane. As Charley accelerated toward the east it gradually weakened and was eventually absorbed within the circulation of a large extratropical cyclone.

### TROPICAL STORM DANIELLE SEPTEMBER 4-7

A midtropospheric low and a weak tropical wave interacted to produce an area of disturbed weather over Florida and the eastern Gulf of Mexico in early September. The weather system tracked westward across the northern Gulf and formed a tropical depression on September 4 just off the Louisiana coast. The depression moved toward the west-northwest and became a tropical storm only 6 hr before the center crossed the Texas coast in the Galveston Bay area during the evening of September 5.

Danielle's maximum strength occurred just before landfall. Offshore oil rigs reported winds of 50 kn and a sea-level pressure of 1004 mb. Tides along the Texas and Louisiana coasts were no more than 2 to 3 ft above normal and wind damage was negligible.

The main impact of the storm was caused by heavy rain, which spread westward across Texas. Rainfall at the Beaumont airport established a 24-hr record of 17.16 in, resulting in major flooding. Farther west, a 25-in rainfall was recorded at Junction, TX. Interstate Highway 10 was closed, and some evacuation was required in central Texas. However, monetary losses from flooding were minor. One death in Beaumont was attributed to the storm.

### HURRICANES EARL (SEPTEMBER 4-10) FRANCES (SEPTEMBER 6-20), AND GEORGES (SEPTEMBER 1-8)

The fifth, sixth, and seventh storms of the season were all recurving hurricanes that originated from African waves. Earl and Frances developed into depressions near the Cape Verde Islands and continued to strengthen into hurricanes. Earl became a hurricane on September 8 and was never more than a minimal one. Frances became a hurricane on the same day and eventually attained winds of 100 kn as it paralleled Earl's track with a lag of several days. Both storms gradually turned north and then northeastward across the central North Atlantic, finally dying over the northern waters.

Meanwhile, a tropical wave which had preceded the two waves that developed into Earl and Frances continued westward instead of turning north. This wave organized into a tropical depression during the first few days of September, but then weakened to a disorganized cloud system which passed to the northwest of the Leeward Islands.



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The residual weather disturbance eventually interacted with an upper level cold-core low, which culminated in the formation of a subtropical depression on September 5 about 300 mi northwest of Bermuda. It slowly took on the appearance of a tropical cyclone. It became a tropical storm on September 7 and a hurricane the next day. Georges is only the third storm since 1886 to become a hurricane north of the 40th parallel. The others are Candice in 1976 and an unnamed hurricane in 1971. Georges reached maximum strength of 70 kn on September 8 as it passed southeast Cape Race, Newfoundland, but lost identity soon thereafter over cold North Atlantic waters.

### TROPICAL STORM HERMINE SEPTEMBER 20-25

Hermine became a tropical storm early on September 21 about 80 mi east of the eastern tip of Honduras. The storm brushed northeast Honduras and made landfall on the following day just north of Belize City, Belize. Except for local heavy rain, the storm had little impact as it crossed the Yucatan Peninsula and emerged into the Gulf of Campeche. Turning toward the southwest, the storm crossed the coast about 100 mi southeast of Vera Cruz, Mexico, where it drifted inland and dissipated.

### HURRICANE IVAN - OCTOBER 1-11

The area of formation, process of development, and direction of movement of hurricane Ivan were all very unusual. It formed from a large, intense, extra-tropical low-pressure system which had migrated from near Portugal to the vicinity of Azores in late September and early October. Near the center of this large cyclonic circulation a tropical storm formed on October 4 and strengthened to a hurricane the following day. No previous hurricanes are known to have developed where Ivan formed.

Ivan first headed toward the southwest, then did a counterclockwise loop, headed westward, and finally turned toward the north-northeast, passing west of the Azores on October 10. It headed over the cold northern waters and met a fate similar to that of Bonnie, Frances, Earl, and Georges.

### HURRICANE JEANNE - NOVEMBER 7-16

Jeanne was one of three November hurricanes in the Gulf of Mexico during this century and the only one to strengthen into a hurricane while over Gulf waters. The unseasonable storm apparently caught several ships by surprise. Two barges broke loose from their towing vessels in the high seas and winds. One of the barges, an oil rig tender with 16 persons aboard, was carried along near the center of the storm for several hundred miles into the central Gulf of Mexico before being recovered with the aid of the Coast Guard vessel USCGC TANEY.

As Jeanne became a hurricane and turned toward the central Gulf on November 11, a record-breaking rainfall on the fringes of the hurricane's circulation deluged Key West, FL. During the 24-hr period, 11/0600 to 12/0600, 23.28 in of rain fell there, including a 6-hr total of 13.58 in.

Jeanne weakened to a tropical storm during the evening of November 12 after maintaining hurricane strength for only about 30 hr. The weakening storm briefly reversed its westward course and dissipated over the open waters as cool dry air was entrained into its core.

### HURRICANE KARL - NOVEMBER 25-27

The occurrence of Jeanne in mid-November was unusual, but hurricanes are even rarer in late November. So, hurricane Karl will be remembered for prolonging the 1980 hurricane season into the late fall.

Even though a small percentage of all hurricanes form from extra-tropical cyclones, Karl was the third storm of the year to do so; the others were Charley and Ivan. Satellite pictures suggest that Karl became a hurricane at 1800 on November 25, when the storm was about 600 mi west-southwest of the Azores. Karl never became more than a minimal hurricane and weakened as it passed within about 200 mi northwest of the westernmost Azores on November 27.



Table 1.--North Atlantic tropical cyclone statistics, 1980

Cyclone number	Name	Class <sup>1</sup>	Dates <sup>2</sup>	Maximum sustained wind (kn)	Lowest pressure (mb)	U. S. damage (millions of \$)	Deaths
1	Allen	H	August 1-11	165	899	300	U. S. - 2; Caribbean - 234
2	Bonnie	H	August 14-19	85	975		
3	Charley	H	August 20-25	70	989		
4	Danielle	T	September 4-7	50	1004	minor	
5	Earl	H	September 4-10	65	985		
6	Frances	H	September 6-20	100	960		
7	Georges	H	September 1-8	70	993		
8	Hermine	T	September 20-25	60	993		
9	Ivan	H	October 4-11	90	970		
10	Jeanne	H	November 8-16	85	986		
11	Karl	H	November 25-27	75	985		

<sup>1</sup>T - tropical storm (winds 34 - 63 kn)  
H - hurricane (winds 64 kn or higher)

<sup>2</sup>Day starts at 0000 GMT

**Table 2**  
**NORTH ATLANTIC TROPICAL CYCLONES FOR PAST YEARS**

TOTAL NUMBER OF TROPICAL CYCLONES, LOSS OF LIFE AND DAMAGE								
Total Number Tropical Cyclones*			Total Number Hurricanes		Loss of Life		Damage by Categories**	
Year	All Areas	Reaching U.S. Coast	All Areas	Reaching U.S. Coast	Total All Areas	United States	Total All Areas	United States
1931	9	2	2	0		0		#
1932	11	5	6	2		0		#
1933	21	7	9	5		63		7
1934	11	5	6	3		17		6
1935	6	2	5	2		414		7
	58	21	28	12				
1936	16	7	7	3		9		6
1937	9	4	3	0		0		4
1938	8	4	3	2		600		8
1939	5	3	3	1		3		3
1940	8	3	4	2		51		6
	46	21	20	8				
1941	6	4	4	2		10		7
1942	10	3	4	2	17	8	7	7
1943	10	4	5	1	19	16	7	7
1944	11	4	7	3	1,076	64	8	8
1945	11	5	5	3	29	7	8	8
	48	20	25	11				
1946	6	4	3	1	5	0	7	7
1947	9	7	5	3	72	53	8	8
1948	9	4	6	3	24	3	7	7
1949	13	3	7	2	4	4	8	8
1950	13	4	11	3	27	19	7	7
	50	22	32	12				
1951	10	1	8	0	244	0	7	6
1952	7	2	6	1	16	3	6	6
1953	14	6	6	2	3	2	7	7
1954	11	4	8	3	720+	193	9	9
1955	12	5	9	3	1,518+	218	9	9
	54	18	37	9				
1956	8	2	4	1	76	21	8	7
1957	8	5	3	1	475	395	8	8
1958	10	1	7	0	49	2	7	7
1959	11	7	7	3	57	24	7	7
1960	7	5	4	2	185	65	8	8
	44	20	25	7				
1961	11	3	8	1	345	46	8	8
1962	5	1	3	0	4	4	6	6
1963	9	1	7	1	7,218+	11	9	7
1964	12	6	6	4	266	49	9	9
1965	6	2	4	1	76	75	9	9
	43	13	28	7				
1966	11	2	7	2	1,040	54	8	7
1967	8	2	6	1	68	18	8	8
1968	8	3	5	1	11	9	7	7
1969	18	3	12	2	364	256	9	9
1970	10	3	5	1	74	11	9	8
	55	13	35	7				
1971	13	5	6	3	44	8	8	8
1972	7	3	3	1	128	121	9	9
1973	8	1	4	0	16	5	7	7
1974	11	2	4	1	3,000+	1	8	8
1975	9	1	6	1	80	21	9	9
	48	12	23	6				
1976	10	4	6	1	77	9	8	8
1977	6	1	5	1	10	0	7	7
1978	12	2	5	0	41	35	7	7
1979	9	5	5	3	1,285	22	9	9
1980	11	2	9	1	236	2	9	8
Total	494	174	283	85				
Mean	9.9	3.5	5.7	1.7				

\*\*The Environmental Data Service has for some time recognized that, without detailed expert appraisal of damage, all figures published are merely approximations. Since errors in dollar estimates vary in proportion of the total damage, storms are placed in categories varying from 1 to 9 as follows:

- |                    |                            |                                    |
|--------------------|----------------------------|------------------------------------|
| 1 Less than \$50   | 4 \$5,000 to \$50,000      | 7 \$5,000,000 to \$50,000,000      |
| 2 \$50 to \$500    | 5 \$50,000 to \$500,000    | 8 \$50,000,000 to \$500,000,000    |
| 3 \$500 to \$5,000 | 6 \$500,000 to \$5,000,000 | 9 \$500,000,000 to \$5,000,000,000 |

\* Including hurricanes and after 1967 subtropical cyclones

# Not reported in literature, believed minor.

+ Additional deaths for which figures are not available.

**Table 3**  
**NORTH ATLANTIC TROPICAL CYCLONES FOR PAST YEARS**

Frequency of Tropical Cyclones (Including Hurricanes) by Months and Years										Frequency of Tropical Cyclones Reaching Hurricane Intensity by Months and Years									
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total		May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1931		1	1	2	3	1	1		9	1931					2	1			2
1932	1	1	3	3	3	3	1		11	1932				3	1	1	1		6
1933		1	3	7	5	3	1		21	1933		1	1	3	3	1			9
1934	1	1	1	2	2	3	1		11	1934	1	1	1	1	1	1	1		6
1935				3	1	2			6	1935				2	1	2			5
1936		3	2	6	4	1			16	1936		1	1		2				7
1937			1	2	6				9	1937				3	3				3
1938				3	1	3	1		8	1938				2	1				3
1939		1		1	1	2		1	5	1939				1		2			3
1940	1			3	2	2			8	1940				3	1				4
1941					4	2			6	1941					3	1			4
1942				3	3	3	1		10	1942				3			1		4
1943			1	2	4	3			10	1943			1	1	2	1			5
1944			3	2	4	2			11	1944			2	1	3	1			7
1945		1	1	4	3	2			11	1945		1		1	1	2			5
1946			1	1	1	2			6	1946			1		1				3
1947			1	2	3	3			9	1947				2	1	1			5
1948	1		1	2	3	1	1		9	1948				1	3	1	1		6
1949				3	3	2	1		13	1949				2	4	4			7
1950				4	3	6			13	1950				4	3	4			11
1951	1			3	4	2			10	1951	1			2	3	2			8
1952				2	2	2			7	1952				2	2	2			6
1953	1			3	4	4	1	1	14	1953				2	3	1			6
1954		1	1	1	4	1	1	1	11	1954		1		2	3	1		1	8
1955			1	4	5	2			12	1955				3	5	1			9
1956		1	1	1	4	1			8	1956			1	1	1	1			4
1957		2	1	1	4	1			8	1957		1		2	2				3
1958		1		4	4	1			10	1958				3	3	1			7
1959	1	2	2	1	3	2			11	1959	1	1	2	3	3	1			7
1960		1	2	1	3				7	1960			1	1	2	1			4
1961			1		6	2			11	1961			1	1	5	1	1		8
1962				2	2	1	2		5	1962			1	1	1	1			3
1963			1	1	5	2			9	1963			1	1	4	1			7
1964			1	1	4	4	1	1	12	1964				2	3	1			6
1965		1	1	2	2	1			6	1965				2	1	1			4
1966		1	4	1	1				11	1966		1			1		1		7
1967				1	4	3			8	1967				1	1	2			6
1968		3		1	3	1			8	1968		2		1	3	1			6
1969			1	5	6	5	1		18	1969				4	4	3	1		12
1970	1		1	3	3	2			10	1970	1		1	1	1	2			5
1971			1	4	6	1	1		13	1971				2	4				6
1972	1	1	2	2	2		1		8	1972		1		1	1				3
1973			2	2	3	2			9	1973			1	1	2	1	1		4
1974		1	1	4	3	1			10	1974			1	2	3				6
1975		1	1	2	3	1			9	1975									3
1976	1		1	5	2	1			10	1976				4	1	1			6
1977			1	3	3	2			9	1977				1	2				3
1978			1	4	3	3			12	1978				2	2	1			5
1979		1			5	1			9	1979			1	2	2	1			5
1980				3	2	1			11	1980				3	3		2		8
Total	11	27	41	127	171	93	19	3	494	Totals	7	11	19	83	109	49	9	1	283



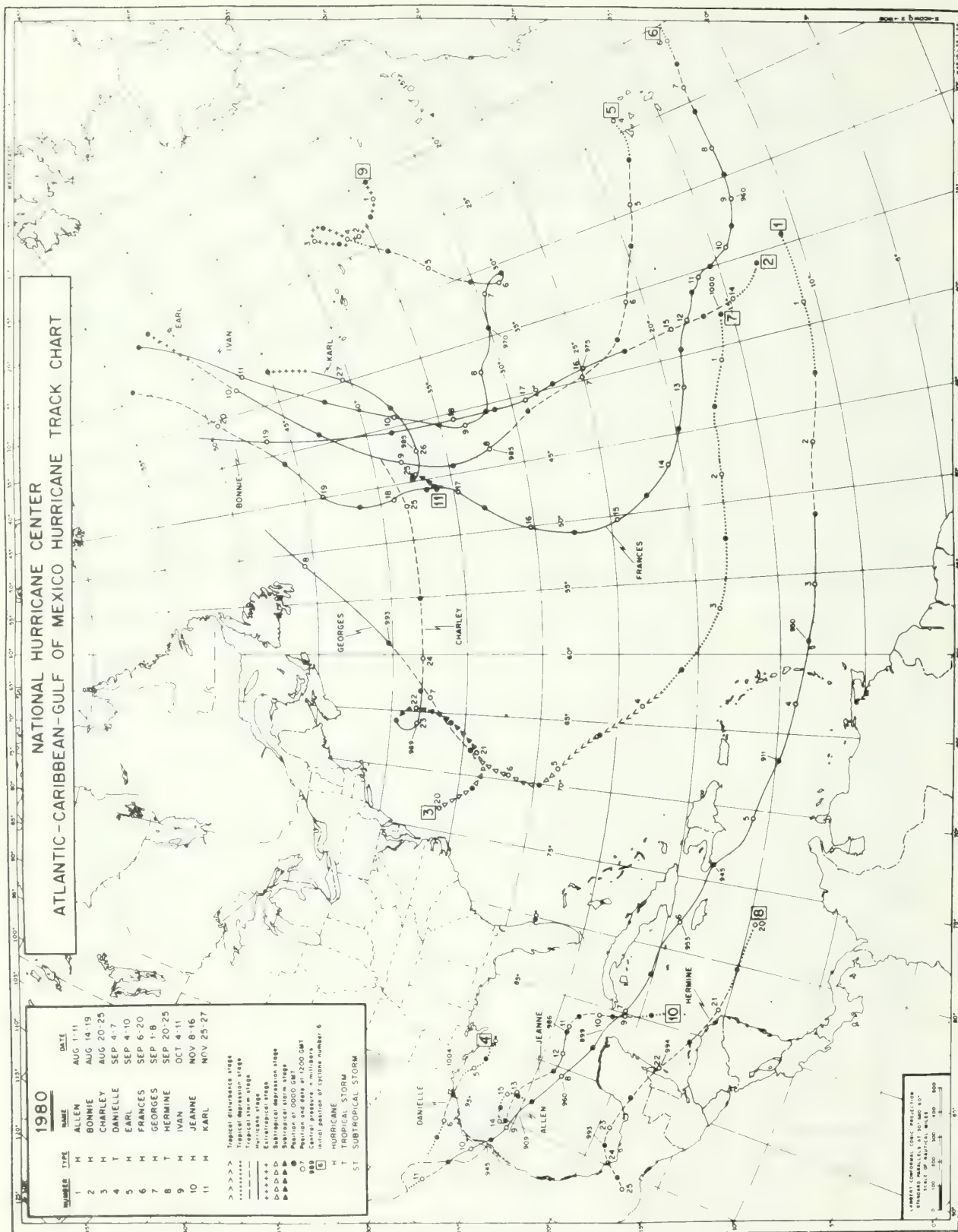


Figure 1.--Tracks of North Atlantic tropical cyclones, 1980.

# EASTERN NORTH PACIFIC TROPICAL CYCLONES, 1980

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The 1980 eastern North Pacific tropical cyclone season began June 9 and ended October 29. Spanning 143 days, the season was 29 days shorter than the 1979 season. There were 15 cyclones during the season, two more than in 1979. Seven of the 15 cyclones became hurricanes, seven were tropical storms, and one was a tropical depression. Hurricane hours during the 1980 season totaled 586 compared to 326 in 1979. Tropical storm hours totaled 476 compared to 482 in 1979. The highest sustained windspeed during the 1980 season was 120 kn, attained by hurricane Kay on September 18. Only three-sevenths of the 1980 hurricanes had windspeeds equal to or in excess of 100 kn compared to two-thirds of the 1979 hurricanes. Table 1 shows the monthly distribution of 1980 tropical cyclone activity. Tables 2 and 3 compare this activity with that of recent years. The 1966-80 period was chosen for comparison since it probably includes all tropical cyclone activity due to satellite coverage. Prior to 1966 some activity was undetected because of the sparsity of data. Cyclone tracks are shown in Figures 1 and 2.

Eastern Pacific Hurricane Center forecasters issued 270 tropical cyclone advisories during the 1980 season compared to 198 in 1979. Advisories were issued four times daily on a regularly scheduled basis.

The 1980 season was relatively uneventful in that none of the tropical cyclones moved onshore, and no reports of damage or casualties were received from ships at sea. Seventy miles was the nearest any storm approached land, when tropical storm Newton dissipated west of Puerto Vallarta on the central Mexican coast.

The National Satellite Service Field Station, collocated with the Eastern Pacific Hurricane Center (EPHC), provided excellent satellite coverage. Several movie loops were available each day as well as visual and infrared data from the stationary GOES and the polar-orbiting NOAA satellites. Enhanced H-curve infrared imagery was especially useful in depicting high-level cold-core centers. Cyclonic intensity was calculated using the Dvorak technique of satellite analysis.

No reconnaissance flights were made into eastern North Pacific tropical cyclone activity during the 1980 season. However, U.S. Air Force aircraft were placed on standby status during hurricane Howard, when the cyclone threatened the west coasts of Baja and southern California.

Although satellite imagery continues to improve and is an important tool used by tropical

forecasters, aircraft reconnaissance and synoptic ship reports retain their importance as invaluable in situ observations.

Only named tropical cyclones are described in the following paragraphs.

## HURRICANE AGATHA - JUNE 9-15

The 1980 eastern North Pacific tropical cyclone season began with a small disturbance 400 mi south-southwest of Acapulco, Mexico, at 1800 on June 7. Moving west the disturbance began to intensify over 85°F water. Cyclonic circulation began to appear about the center by the 9th and the disturbance was upgraded to a tropical depression near 8.9°N, 111°W, about 130 mi southwest of Clipperton Island. The cyclone continued westward. By 1800 winds near the center had increased to 45 kn and the depression was upgraded to tropical storm Agatha near 8.3°N, 113.7°W. Observations from the ships NOVOWLYANOVSK and BABAEYEVSK, 130 mi east-southeast and north of Agatha, respectively, were helpful in locating the cyclone near 9.5°N, 114.8°W, at 1200 June 10. Winds near the center had increased to 70 kn by 1800, and Agatha was upgraded to a hurricane near 9.9°N, 114.9°W. The cyclone turned northwestward and reached its maximum intensity of 100 kn at 0000 on the 12th. The hurricane began to weaken with low clouds moving into the circulation from the west and north over 83°F water. By 1800 on the 13th winds near the center had diminished to 50 kn as the cyclone was downgraded to a tropical storm. Agatha turned westward and continued to weaken. She was downgraded to a tropical depression near 17.2°N, 130.7°W, at 1200 on the 14th. The final advisory was issued on the cyclone at 1800 on the 15th as the center dissipated near 17.9°N, 136°W.

## TROPICAL STORM BLAS - JUNE 16-19

The second cyclone began as a disturbance 400 mi south-southwest of Acapulco at 0000 on June 15. Moving west-southwestward at 10 kn, the disturbance began to move around the southern side of an upper level high-pressure area over northern Mexico. It was 60 mi north of Clipperton Island on the 16th and began to intensify rapidly over 85°F water. By 1800 the disturbance was upgraded directly to tropical storm Blas near 11.8°N, 109.9°W. Blas turned northwestward and continued to intensify. The storm reached its maximum intensity of 50 kn by 0000 on the 17th, 145 mi north-northwest of Clipperton Island. As Blas continued to move northwestward, she weakened slowly over cooler 82°F water. By 1800 on the 18th winds near the center had diminished to 35 kn, 170 mi south of Clarion Island. By 1200 on the 19th with 30-kn winds, the storm was downgraded to a tropical depression near 15.6°N,



## EASTERN NORTH PACIFIC TROPICAL CYCLONES

116.3°W.

### HURRICANE CELIA - JUNE 25-30

Celia, the fourth cyclone of the season, began as a tropical disturbance 200 mi south of the Gulf of Tehuantepec on June 23. The disturbance began to intensify slowly over 85°F water. It was upgraded to tropical storm Celia near 14.2°N, 103.6°W, on the 25th. The ANCO ENDEAVOUR and EASTERN TREASURE, to the north of Celia, were helpful in analyzing the storm. Celia moved west-northwestward around the southern side of an upper level high and intensified rapidly over 87°F water. By 1800 on the 26th winds near the center had increased to their maximum intensity of 65 kn, and the storm was upgraded to a hurricane near 15.3°N, 108.3°W. The Danish cargo ship DITTE SKOU, east-northeast of Celia, radioed helpful observations. The cyclone passed 10 mi south of Clarion Island at 0600 on the 28th, then began to weaken rapidly over cooler 77°F water. By 1800 the winds had decreased to 55 kn. By 0600 on the 29th winds had diminished to 30 kn and the cyclone was downgraded to a tropical depression. The depression moved northwestward, then turned north-northwest, dissipating near 23.1°N, 120.3°W, by the 30th. Although the depression dissipated 600 mi south of the California border, high-level clouds associated with the cyclone were carried northward and inland over the state.

### TROPICAL STORM DARBY - JULY 1-3

As the final advisory was being issued on Celia, the next cyclone of the season was beginning to develop 500 mi west-southwest of Acapulco. Moving at 15 kn to the west-northwest, the disturbance was upgraded to a tropical depression on July 1. Turning westward the depression began to intensify over 85°F water. On the 2d the winds had increased to 35 kn, and the cyclone was upgraded to tropical storm Darby near 12.8°N, 118.4°W. Six hours later his winds near the center had reached their maximum intensity of 45 kn. Darby began to weaken rapidly over 78°F water. By the 3d winds near the center had diminished to 30 kn, and the storm was downgraded to a depression near 14.4°N, 123.1°W. With sea-surface temperatures dropping to 76°F and low clouds entering into the cyclonic circulation from the north, the depression weakened rapidly.

### TROPICAL STORM ESTELLE - JULY 12-13

The sixth and shortest lived cyclone of the season lasted only 24 hr. It began as a disturbance 250 mi southwest of Acapulco at 0000 on July 11. The storm intensified rapidly and was upgraded directly to tropical storm Estelle near 15.6°N, 107.7°W, at 0000 on the 12th. Six hours later winds near the center had increased to their maximum intensity of 40 kn over 84°F water. The cyclone turned toward the west-northwest and began to weaken over 82°F water. The winds decreased to 25 kn by 1800, and the storm was downgraded to a depression. The final advisory was issued at 0000 on the 13th, 130 mi southwest of Socorro Island.

### TROPICAL STORM FRANK - JULY 18-22

Four days after the final advisory on Estelle, the seventh cyclone of the season was discovered 175 mi northeast of Clipperton Island. It began to show cyclonic circulation after 24 hr and was upgraded to a depression on July 18 when 200 mi north-northwest of Clipperton Island. The cyclone then turned northwest and showed little intensification through the next 48 hr. The depression began to move over 82°F water early on the 20th and intensified. By 1200 winds had increased to 40 kn and the cyclone was named Frank near 16.9°N, 115.2°W. Frank reached maximum intensity of 45 kn near 17.3°N, 115.7°W, at 1800. As he traveled northwest he began to move over 78°F water and weaken. The storm turned westward, and by 1800 on the 21st winds had diminished to 30 kn. Frank was downgraded to a depression near 18.4°N, 117.6°W. With low clouds moving into the cyclonic circulation from the north and west, the depression weakened rapidly. The cyclone dissipated 275 mi west of Clarion Island.

### HURRICANE GEORGETTE - JULY 28-31

Georgette had her debut 90 mi southwest of Acapulco on July 26. Moving west at 10 kn, the disturbance intensified over 87°F water. By the 28th cyclonic circulation could be seen and the disturbance was upgraded to a depression 160 mi southeast of Socorro Island. The cargo ship EISHO MARU, 160 mi south-southeast of the depression, contributed an important observation. Traveling west-northwestward the winds had increased to 35 kn by the 29th and the cyclone was upgraded to tropical storm Georgette, while 70 mi southwest of Socorro Island. At 1530 the CHRISTINA C, 70 mi east-northeast of Georgette, reported she was unable to maintain heading in 20- to 30-ft seas and winds over 60 kn. Sea-level pressure of 29.28 in (991.6 mb) was reported by the CHRISTINA C. Based on this report and later satellite information, Georgette was upgraded to a hurricane at 1600 on the 29th near 19.7°N, 114.2°W. Georgette continued west-northwestward over cooler 81°F water and weakened. Winds dropped to 55 kn by the 30th, and the cyclone was downgraded to a tropical storm. Winds near the center had diminished to 30 kn by the 31st. The cyclone weakened rapidly over 74°F water with colder low clouds moving into her circulation.

### HURRICANE HOWARD - JULY 31-AUGUST 7

As Georgette began to weaken from hurricane to tropical storm intensity, the next cyclone of the season was beginning to develop 300 mi south of Acapulco. The disturbance showed cyclonic circulation by July 31 and was upgraded to a tropical depression. The storm intensified over 86°F water. By 1200 the winds had increased to 40 kn and tropical storm Howard was named near 11.1°N, 105.3°W. He traveled west-northwestward and the winds had increased to 70 kn by 0000 on August 2 and was upgraded to a hurricane 180 mi northwest of Clipperton Island. Howard turned northwestward, moving around the southwest side of an upper level high-pressure area that was drifting westward from the central Mexican coast.



## EASTERN NORTH PACIFIC TROPICAL CYCLONES

His winds increased to their maximum intensity of 90 kn by 0600 on the 4th near 48.6°N, 116.7°W. Continuing on a northward track the cyclone weakened over cooler water. Low clouds to the west entered the circulation, further weakening the hurricane. By the 6th winds had diminished to 60 kn and Howard was downgraded to a tropical storm near 22.3°N, 119.7°W. Turning more northward, the storm weakened rapidly over progressively colder water. On the 7th winds had dropped to 25 kn, and the storm was downgraded to a depression.

### HURRICANE ISIS - AUGUST 5-11

Isis developed 100 mi south of Acapulco on August 4. Drifting westward over 85°F water, the cyclone intensified. Winds had increased to 35 kn by 0600 on the 6th and the depression was upgraded to tropical storm Isis near 14.9°N, 103.2°W. The cyclone began to move around the southern side of an upper level high centered near the tip of Baja, California. Isis turned northward and, with the winds increasing to 65 kn, was upgraded to a hurricane 310 mi east-southeast of Socorro Island at 1200 on the 7th. Weather reports from the ANCO CHARGER, VERRAZANO, DELTA AFRICA, OGDEN FRAZER, YAWATA MARU, MONTEPEL VICTORY, TOYOTA MARU No. 16, and ALASKA 1 helped locate Isis between 1800 on the 6th and 0000 on the 8th. By the 8th Isis was 190 mi east of Socorro Island. The cyclone now turned west-northwestward and continued intensification. The TOYOTA MARU No. 16 was 150 mi northeast of the center at 0600 with 58-kn east-southeasterly winds and 32-ft seas. By 1800 Isis had reached her maximum intensity of 85 kn while 55 mi northeast of Socorro Island. Winds on Socorro increased to 55 kn as Isis passed 50 mi to the north of the island. Observations from the CLOVER and CAUSEWAY were especially useful on the 9th. Isis continued on a west-northwestward track and weakened over cooler water as low clouds to the west entered the circulation. By the 10th the winds were down to 60 kn and the hurricane was downgraded to a tropical storm near 21.3°N, 113.8°W. Isis continued west-northwestward for another 12 hr, then turned westward and weakened rapidly. The HAGOROMO MARU and REYNOLDS were helpful in locating the center of the storm. On the 11th the winds dropped to 30 kn and Isis was downgraded to a depression near 21.8°N, 116.9°W.

### HURRICANE JAVIER - AUGUST 22-29

A little over a week passed before the next tropical disturbance formed 350 mi south of the Gulf of Tehuantepec on August 19. Moving slowly to the west-northwest, the disturbance intensified to a depression and then to tropical storm Javier near 14.6°N, 107.5°W at 1200 on the 23d. The winds rapidly increased to 65 kn and Javier was upgraded to a hurricane near 15.5°N, 109.4°W, at 0000 on the 24th. The SMIT-ROTTERDAM, 110 mi to the east, felt the influence of the hurricane. Javier passed 160 mi south of Socorro Island at 0900. He reached maximum intensity of 100 kn at 0000 on the 25th about 200 mi southwest of Socorro. Javier moved west-northwestward, then northward, passing 80 mi south of Clarion

Island at 0400. Winds continued at 100 kn through 1200 and then began to decrease as the cyclone moved over cooler 80°F water. At 0600 on the 27th winds were down to 55 kn and the cyclone was downgraded to a tropical storm near 20.1°N, 123.1°W. Javier moved west-northwestward for another 12 hr, then turned north-northwest toward an upper-level trough off the west coast of the United States. By the 28th his winds were down to 30 kn and the storm was downgraded to a depression. The container ship COLUMBUS VIRGINIA was 230 mi to the northwest. The final advisory on Javier was issued at 0000 on the 29th.

### HURRICANE KAY - SEPTEMBER 16-30

Two and a half weeks elapsed before the next disturbance was found 180 mi south of Acapulco on September 14. It moved west-southwestward for 24 hr, then westward, and was upgraded to a tropical depression on the 16th. The cyclone then turned west-northwestward and the winds increased to 35 kn by 1200 and Kay was named near 12.8°N, 104.6°W. By 0600 on the 17th Kay was upgraded to a hurricane with 65-kn winds near 13.9°N, 106.4°W. The VLADIMIR MAYAKOVSKIY, 70 mi to the north-northeast of the storm sent an important observation. Kay passed 150 mi south of Socorro Island at 0800 September 18. By 1800 the hurricane was moving at 18 kn and the winds had reached their maximum intensity of 120 kn. By 1200 on the 20th the winds were down to 55 kn over 78°F water and Kay was downgraded to a tropical storm near 18.1°N, 123°W. Winds diminished to 45 kn by 1800 and held steady for the next 18 hr before increasing again as the storm, still moving westward, turned slightly to the south over warmer water. On the 22d Kay had 55-kn winds near the center. The winds increased to 70 kn by the 23d, and Kay was again upgraded to a hurricane near 18.5°N, 133.5°W. Kay crossed 140°W longitude and into the Central Pacific Hurricane Center's (CPHC) area of responsibility at 1400 on the 24th.

### TROPICAL STORM LESTER - SEPTEMBER 21-25

The thirteenth cyclone of the season had its origin 100 mi south of Acapulco on September 20. Within 24 hr cyclonic circulation could be seen on satellite imagery and the disturbance was upgraded to a tropical depression. The DELTA AMERICA was 100 mi to the northeast. Winds increased to 35 kn by 1800 on the 22d and tropical storm Lester was born about 220 mi east-southeast of Socorro Island. The TSU, SOVEREIGN VENTURE and TOYOTA MARU were among those reporting near the storm. Moving around the southern side of an upper level high, the cyclone continued on a westerly track. At 0600 on the 23d Lester was 130 mi southeast of Socorro Island. The GARDENIA was 160 mi west-northwest of the cyclone. On the 24th Lester turned eastward and began to weaken under an upper level trough moving across northwestern Mexico. He was downgraded to a tropical depression near 17.5°N, 110.4°W, at 1200.

### TROPICAL STORM MADELINE - OCTOBER 11-12

Two weeks passed before the next cyclone of the season began 200 mi east of Clipperton Island

## EASTERN NORTH PACIFIC TROPICAL CYCLONES

on October 9. The disturbance drifted northward for 12 hr, then turned west-northwestward over 85°F water, and began to intensify. The winds near the center increased from 25 to 35 kn by 0600 on the 11th, and the depression was upgraded to tropical storm Madeline near 12.8°N, 108.8°W. Turning northwest then north-northwest, Madeline was moving around the western side of an upper level high off the west coast of Mexico. By 1800 the storm was near 14.1°N, 110°W. As the cyclone moved north-northwest it passed over cooler water and weakened. By the 12th the winds were down to 30 kn, and the storm was downgraded to a depression near about 230 mi south of Socorro Island.

### TROPICAL STORM NEWTON - OCTOBER 28-29

Tropical storm Newton, the final cyclone of the season, began 375 mi south-southeast of

Socorro Island on October 26. The disturbance intensified over 83°F water and was upgraded to a depression at 0300 on the 28th. It then turned north-northeastward toward an upper level trough over northwest Mexico. The depression was upgraded to tropical storm Newton about 120 mi south-southeast of Socorro Island at 0600. Turning slowly toward the northeast, Newton began to move at 9-kn toward the Mexican coast. Newton barely made the storm category with 35-kn winds. A combination of cooler water upper level wind shear weakened him rapidly and he was again a depression by 0600 on the 29th. The final advisory was issued at 1200.

Table 1.--Monthly distribution of eastern North Pacific tropical cyclones, 1980\*

	May	June	July	Aug.	Sept.	Oct.	Nov.	Total
Tropical depressions	0	1	0	0	0	0	0	1
Tropical storms	0	1	3	0	1	2	0	7
Hurricanes	0	2	2	2	1	0	0	7
Total	0	4	5	2	2	2	0	15

\*Cyclones are ascribed to the month in which they began.

Table 2.--Frequency of eastern North Pacific tropical storms and hurricanes combined by months and years\*

Year	May	June	July	Aug.	Sept.	Oct.	Nov.	Total
1966	0	1	0	4	6	2	0	13
1967	0	3	4	4	3	3	0	17
1968	0	1	4	8	3	3	0	19
1969	0	0	3	2	4	1	0	10
1970	1	3	6	4	1	2	1	18
1971	1	1	7	4	2	2	1	18
1972	1	0	1	6	2	1	1	12
1973	0	3	4	1	3	1	0	12
1974	1	3	3	6	2	2	0	17
1975	0	2	4	5	3	1	1	16
1976	0	2	4	4	3	1	0	14
1977	1	1	1	1	3	1	0	8
1978	1	3	4	6	2	2	0	18
1979	0	2	2	2	1	2	1	10
1980	0	3	5	2	2	2	0	14
Total	6	28	52	59	40	26	5	216
Average	0.4	1.9	3.5	3.9	2.7	1.7	0.3	14.4

\*Cyclones are ascribed to the month in which they began.

Table 3.--Number of eastern North Pacific tropical storms reaching hurricane intensity by months and years\*

Year	May	June	July	Aug.	Sept.	Oct.	Nov.	Total
1966	0	1	0	4	2	0	0	7
1967	0	1	0	2	1	2	0	6
1968	0	0	0	3	2	1	0	6
1969	0	0	1	1	1	1	0	4
1970	1	0	1	1	0	1	0	4
1971	1	1	5	2	2	1	0	12
1972	1	0	0	6	1	0	0	8
1973	0	1	3	0	2	1	0	7
1974	0	2	2	4	2	1	0	11
1975	0	1	2	3	1	1	0	8
1976	0	2	1	2	3	0	0	8
1977	0	0	1	1	1	1	0	4
1978	1	2	3	4	1	1	0	12
1979	0	1	1	2	1	1	0	6
1980	0	2	2	2	1	0	0	7
Total	4	14	22	37	21	12	0	110
Average	0.3	0.9	1.5	2.5	1.4	0.8	0.0	7.3

\*Cyclones are ascribed to the month in which they began.



# EASTERN NORTH PACIFIC TROPICAL STORMS AND HURRICANES, 1980

NO.	INTENSITY	NAME	DATE
1.	HURRICANE	AGATHA	JUNE 9-15
2.	TROPICAL STORM	BLAS	JUNE 17-19
3.	HURRICANE	CELIA	JUNE 25-29
4.	TROPICAL STORM	DARBY	JULY 1-3
5.	TROPICAL STORM	ESTELLE	JULY 12-
6.	TROPICAL STORM	FRANK	JULY 18-22
7.	HURRICANE	GEORGETTE	JULY 28-31

## LEGEND

- 1200 GMT (DATED)
- 0000 GMT
- TROPICAL DEPRESSION STAGE
- - - TROPICAL STORM STAGE
- HURRICANE STAGE

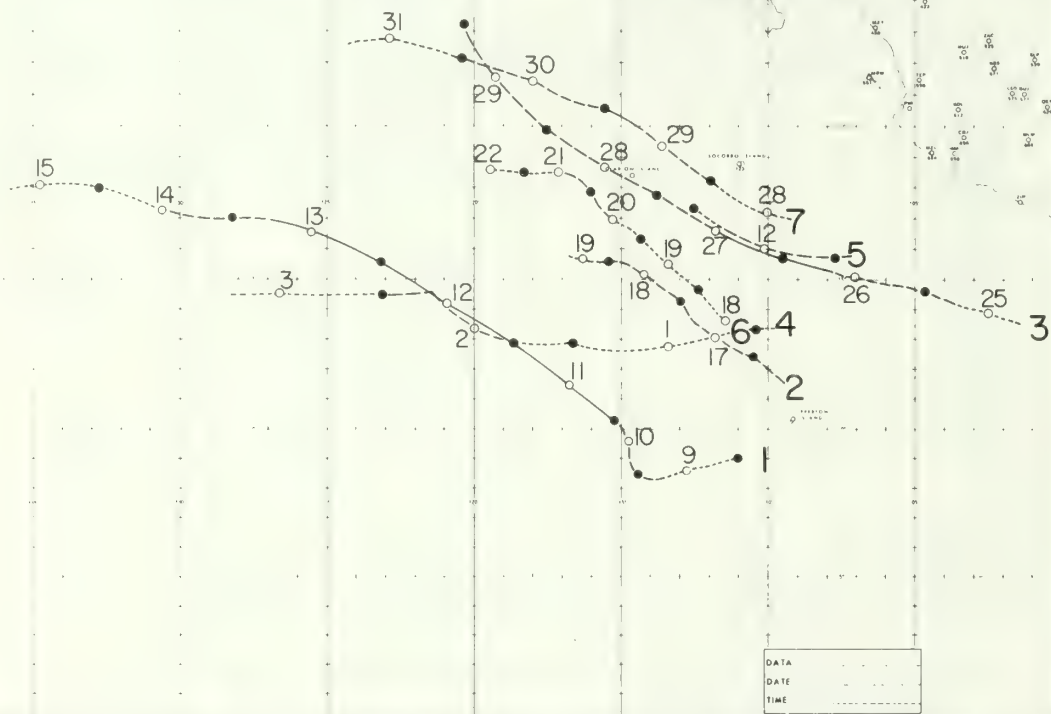


Figure 1.--Tracks of eastern North Pacific tropical cyclones, June 9 - July 31, 1980.

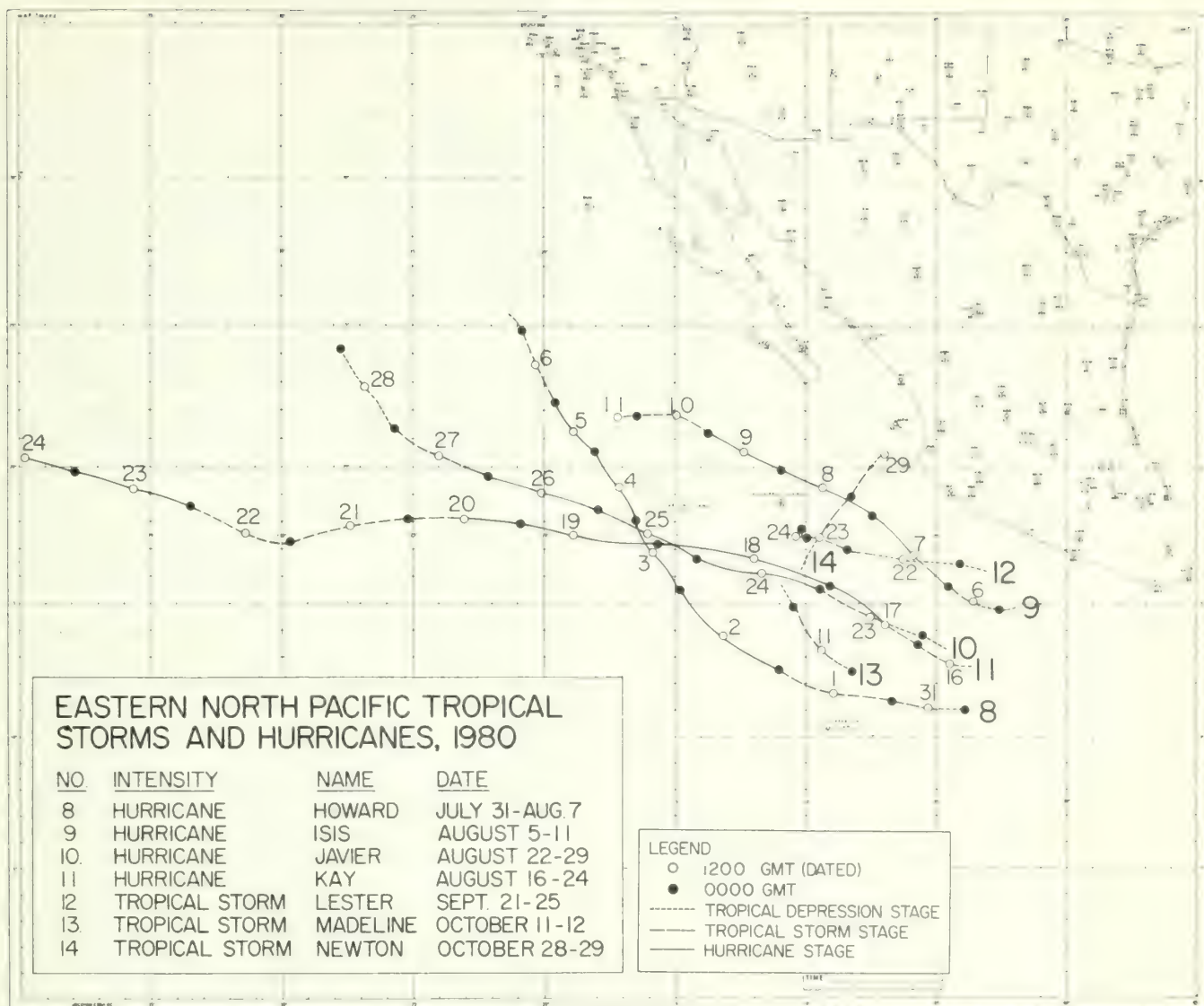


Figure 2. --Tracks of eastern North Pacific tropical cyclones, July 31 - October 29, 1980.

# WESTERN NORTH PACIFIC TYPHOONS, 1980

Extracted from Annual Tropical Cyclone Report, 1980, U.S.  
Naval Oceanographic Command Center, Joint Typhoon  
Warning Center, Guam, Mariana Islands

The western North Pacific Experienced the second consecutive year of below-normal tropical cyclone activity during 1980. Twenty-eight tropical cyclones occurred during both 1979 and 1980 compared to an average annual total of about 33 cyclones (Tables 1 and 2). Four significant tropical cyclones failed to develop beyond the tropical depression (TD) stage, and nine tropical storms (TS) failed to reach typhoon intensity. Of the 15 tropical cyclones that developed to typhoon (TY) intensity, only 2 reached supertyphoon (ST) intensity of 130 kn. Tropical cyclones reaching tropical storm intensity or greater are assigned names in alphabetical order from a list of alternating male and female names. Each tropical cyclone's maximum surface winds (kn) and minimum observed sea-level pressure (mb) were obtained from best estimates based on all available data. The distance traveled (mi) was calculated from the Joint Typhoon Warning Center's (JTWC) official best track.

The number of warning days decreased from 149 in 1979 to 128 in 1980. There were 37 days with two cyclones and 3 days with three or more cyclones.

The cyclone tracks are shown in Figures 1, 2, 3, 4 and 5. The tracks are shown from first detection until dissipation or becoming extratropical. In Tables 1 and 2 the storms are credited in the month that the first warning was issued. Maximum winds are estimates of sustained windspeeds for a 1-min average.

Individual typhoons are described in the following narratives. Times are GMT unless otherwise indicated.

## TYPHOON DOM

Dom was the first tropical cyclone that developed to typhoon intensity in the Western North Pacific in 1980. Dom had several features of interest: a pronounced tilt in the vertical axis during the developing stages and the execution of a rare anticyclonic loop in the later stages of his existence.

Satellite imagery showed a weak disturbance which first appeared along the near-equatorial trough on May 5. The disturbance showed no significant development as it tracked across the Caroline Islands during the following 3 days. By the 9th satellite imagery indicated strong outflow on the west side of the circulation and increased organization of convective cloud elements. Little change in intensity occurred during the next 2 days, during which time the 700-mb circulation was displaced as much as 77 mi west-southwest of the surface center. Vertical shear remained strong as Dom moved westward, steered by strong mid- to upper level easterlies along the southern periphery of the mid-level subtropical ridge axis. On May 10 a midtropospheric low-pressure center developed over the Asia Mainland, causing the ridge to recede eastward. Dom reached

tropical-storm intensity at 1800 on the 10th as an anticyclone with outflow in all quadrants developed at upper levels.

Dom attained typhoon intensity at 0600 on the 12th. When Dom intensified to 90 kn, he had a large eye 30 mi in diameter and his speed of movement decreased markedly. Dom became virtually stationary as he drifted slowly toward Luzon and weakened due to the decreased moisture content of the air being drawn into his circulation across the mountainous terrain of Luzon. By 1200 on the 14th Dom had weakened to tropical-storm intensity and was showing indications of impending recurvature.

Dom unexpectedly regained typhoon strength 24 hr after recurvature. Reintensification was made possible by lessening of the land effect and energy provided by a tongue of warm water extending north of Luzon. Dom then tracked northeastward south of the area of maximum sea surface temperature. He finally decreased to tropical storm intensity due to the shearing effect of strong upper tropospheric westerlies and strong low-level easterlies. The upper level center continued to track eastward, whereas the surface circulation began a rare anticyclonic loop as it tracked westward under the influence of the low-level easterly flow. At 0000 on the 19th, JTWC issued the final warning on Dom.

## TYPHOON ELLEN

Typhoon Ellen developed in an active, near-equatorial trough west of the Truk Islands on May 11. The initial tropical disturbance became evident on satellite imagery between 1200 on the 11th and 0000 on the 12th. Between 1200 and 1600 on the 12th Ellen's satellite signature improved markedly. Aircraft reconnaissance at 0422 on the 13th confirmed Ellen's rapid development with maximum surface winds estimated at 45 to 50 kn. The first warning was issued at 0600 on the 13th. Postanalysis indicates that Ellen reached tropical-storm strength at 1800 on the 12th.

Ellen appeared to be following Dom's track across the Philippine Sea, but on the 15th she abruptly turned to the north and was headed for Japan. Ellen tracked north-northwestward and intensified to 65 kn. She passed 220 mi west of Guam at 0000 on the 17th with maximum sustained surface winds of 110 kn.

Typhoon Ellen's surface circulation followed a pronounced oscillatory motion about a basic north-northwest track. The short-term oscillations were difficult to interpret and thus made forecasting Ellen's movement very difficult.

During this period Ellen deepened to her lowest minimum sea-level pressure of 931 mb and intensified an additional 45 kn, reaching her maximum intensity of 110 kn. Ellen recurved between 25° and 30°N and accelerated northeastward at forward speeds in excess of 30 kn. Following recurvature, Ellen weakened rapidly and merged



## WESTERN NORTH PACIFIC TYPHOONS

with an extratropical low-pressure system south of Honshu.

Ellen passed closer to Japan than originally forecast due to rapid deepening of a midlatitude trough over Japan and rapid intensification of the subtropical ridge east of Japan. Flooding reported in Kyushu and Shikoku resulted from heavy rain produced by the extratropical low-pressure system which eventually merged with Ellen south of Honshu.

### TYPHOON JOE

Typhoon Joe, the ninth tropical cyclone in the western Pacific region, proved to be very predictable. Joe's genesis from a tropical disturbance into a mature tropical cyclone was slow. Satellite imagery first indicated a disturbance along the equatorial trough on July 14 over the Caroline Islands. On the 16th aircraft reconnaissance found a weak surface circulation which did not extend up to the 700-mb level. At that time the minimum sea-level pressure was 1006 mb. Defense Meteorological Satellite Program (DMSP) imagery on the 17th suggested that the disturbance was developing a circulation center that extended at least to midtropospheric levels. Aircraft reconnaissance substantiated that the disturbance had indeed developed significantly since the 16th and that the circulation center had extended up to the 700-mb level. The depression was upgraded to tropical storm Joe on the 18th, and typhoon strength was attained on the 19th.

Joe tracked along a nearly straight course through much of his existence. His forward speed of movement was rapid and nearly constant, even while passing over Luzon. This unusually persistent track and high speed of movement was correlated with an abnormally strong mid- and upper tropospheric subtropical ridge. Six hours prior to landfall over Luzon, Joe attained an intensity of 105 kn with a minimum sea-level pressure of 940 mb at 1200 on July 20. Joe weakened rapidly to tropical-storm strength while crossing Luzon, but still remained very destructive. As he tracked across the mountainous terrain of Luzon, where peaks approach 10,000 ft, the track deviated slightly, becoming more westward. It took just over 6 hr for Joe to cross Luzon, but in that short time the Philippine Islands were inundated by heavy rains which produced massive flooding and resulted in extensive crop and property damage. Approximately 177,000 people were left homeless and 19 deaths reported. Exact figures could not be compiled in time due to typhoon Kim, which hit the Philippines within a week of Joe, compounding destruction that the Philippines had already suffered.

Upon entry into the South China Sea, Joe reintensified to typhoon strength. He attained a second maximum intensity of 90 kn as determined by Dvorak analysis of satellite data. At the time of maximum intensity, the radius of winds greater than 30 kn extended 450 mi to the east of Joe's center, covering most of the South China Sea north of 10°N. The LNC CAPRICORN found 51-kn winds and 13-ft seas in the Luzon Strait. The SAMDA encountered 58-kn winds and a minimum pressure of

986 mb 150 mi from the eye, and the APOLLO PEAK, about 40 mi from the center reported 57-kn winds and 973-mb pressure. The JUPITER II dragged anchors and crashed into a sea wall at Manila.

While transiting across the South China Sea, Joe devastated the coastal regions which paralleled his track. Damage to crops and property occurred in southern China due to flooding caused by torrential rains. Joe also left many homeless and claimed more lives while tracking toward Vietnam.

### SUPERTYPHOON KIM

Supertyphoon Kim, one of the most intense typhoons of the 1980 season, slammed onto the eastern coast of Luzon 4 days after typhoon Joe had practically immobilized the area. Accounts of the aftermath of typhoon Kim estimated that 15 people were killed and 167,000 residents of the Philippines were displaced. Torrential rains caused massive flooding over Luzon as far south as Manila.

Kim was first detected on satellite imagery on July 19. The disturbance appeared as an area of enhanced convection embedded in the near-equatorial trough. Further intensification appeared likely as the tropical upper-tropospheric trough was positioned to the northwest of the convective area. Aircraft reconnaissance data indicated a well-defined, closed surface circulation with windspeeds of 25 to 30 kn and a central pressure of 1001 mb approximately 360 mi southeast of Guam.

At 1200 on the 21st the tropical depression passed directly over Ulithi, which reported a wind maximum of 35 kn. This information, plus a subsequent aircraft report of a central surface pressure of 997 mb, prompted JTWC to upgrade the depression to tropical storm Kim at 1800. Further intensification was slow during the 22d and 23d. Kim was following a path similar to that of typhoon Joe across the Philippine Sea. On the 23d aircraft reconnaissance observed a fairly substantial drop in surface pressure to 979 mb and indications that an eyewall was partially forming. Kim was upgraded to a typhoon.

On the 24th a minimum sea-level pressure of 908 mb was measured by dropsonde. This pressure was sufficiently low to qualify Kim as a supertyphoon. Early on the 25th Kim moved onto the coast of Luzon with maximum sustained winds of 100 kn and reported wind gusts as high as 125 kn.

Terrain weakened Kim as she moved slowly across Luzon before emerging in the South China Sea as an ill-defined tropical storm. JTWC forecasters expected Kim to reintensify as a typhoon over the South China Sea similar to Joe. Aircraft reconnaissance, however, continued to report that Kim lacked significant organization and that her associated convective tops were significantly lower than previously observed. The JAPAN IRIS reported 58-kn winds about 80 mi from the center.

A weakness in the midtropospheric ridge allowed Kim to track more northwest towards Hong Kong, and she finally made landfall on the coast of China 90 mi northeast of Hong Kong at 0600 on

## WESTERN NORTH PACIFIC TYPHOONS

the 27th. Maximum sustained winds of 45 kn and wind gusts to 60 kn were reported as Kim moved inland.

### TYPHOON LEX

Typhoon Lex was the most difficult tropical cyclone to forecast during the 1980 season. This typhoon developed from a Tropical Upper Tropospheric Trough near 22°N, 152°E, and initially moved westward. From this point, Lex made five right-angle or greater turns and executed one tight cyclonic loop before finally heading northeastward into the western Pacific east of Japan. The only saving grace was that Lex remained well away from major landmasses.

Lex was first observed as a small disturbed area of convection on July 24. The first warning was issued at 0600 on the 29th after aircraft reconnaissance located a surface circulation center with a central pressure of 1002 mb and estimated maximum surface winds of 35 kn. Twelve hours later, as the satellite signature continued to improve, the cyclone was upgraded to tropical storm Lex.

During the early development stage, a deep steering current was not evident above Lex. However, a broad 200-mb trough to the north-northeast seemed to have the strongest influence and turned Lex from a westward to a northeastward track. As the upper trough moved eastward, a middle- and upper-level ridge built to the northwest of Lex. The steering currents veered from southwesterly to northeasterly in response to the intensifying subtropical ridge, and Lex turned southwestward.

Lex continued to intensify slowly during his southwestward movement, reaching typhoon strength of 65 kn at 0600 on the 31st. On August 2 Lex again changed direction and headed northward through a break in the subtropical ridge. The break had developed as a trough deepened to the north over the Sea of Japan. The DAMPIER MARU was sailing northward and closing with the storm with 20-ft swells from the 1st to the 3d.

Lex executed a cyclonic loop while accelerating northward and, before completing the loop, reached maximum intensity of 80 kn. Upon exiting the loop, Lex continued tracking north until a deep surface low and associated cold front began moving eastward across Japan. As the frontal system approached from the West, Lex curved to the northeast. The slow entrainment of cold air caused Lex to weaken and transition into an extratropical system. The ATLANTIC PIONEER found 54-kn winds and 20-ft waves on the 5th while 360 mi east of the storm's center.

### TYPHOON MARGE

Marge, the sixth tropical cyclone to reach typhoon strength during 1980, developed west of the Marshall Islands. Convective activity appeared to consolidate near 15°N, 159°E, by August 6. The convective area expanded and by the 7th covered an area nearly 5- degrees square.

The first reconnaissance on Marge on the 8th observed surface winds of 35 kn and a central pressure of 998 mb. Based on these data, the

initial warning on tropical storm Marge was issued at 0800. At first Marge followed a generally west-southwestward track. The 500-mb streamline analysis indicated that Marge was located in a col, thus providing a channel for a more northerly track than predicted by climatology. A satellite position fix, combined with aircraft fixes, confirmed the northward track on the 9th.

Marge tracked northward for 17 degrees of latitude between two centers in the subtropical ridge. During the northward trek, Marge intensified to typhoon strength, which she maintained for nearly 5 days. A minimum sea-level pressure of 944 mb supported a maximum intensity of 110 kn for 18 hr.

By the 13th Marge began to encounter strong upper level westerlies. A second course change accompanied by gradual acceleration and weakening began at that time. The final warning on Marge was issued on the 15th as she transitioned into an extratropical cyclone and merged with a midlatitude low-pressure system. The remnants of Marge treated the SEA-LAND PATRIOT to 44-kn winds and 20-ft seas.

### TYPHOON NORRIS

An upper level anticyclone formed over a surface disturbance, and, as the disturbance continued to organize, a Tropical Cyclone Formation Alert was issued on August 23. Norris tracked virtually straight west-northwestward at an average speed of 12 kn from the time of the first warning as a tropical depression on the 24th until landfall on northern Taiwan on the 27th. This straight track was due to the strong mid-level subtropical ridge which extended along 27°N from southern China eastward to the International Dateline during the latter part of August.

A circulation near the Philippine Islands prevented Norris from developing and intensifying more rapidly. When the other circulation finally went ashore over Luzon and dissipated, all the low-level inflow now was available and Norris intensified quickly from 50 kn and 985 mb at 0000 on the 26th to a peak of 90 kn and 950 mb about 36 hr later.

The well-established mid-level ridge north of Norris, with a strong high-pressure cell between Taiwan and Okinawa, was responsible for the climatological west-northwestward track with Norris skirting the northern tip of Taiwan.

Norris passed 10 mi southwest of Yonagunijima at 1200 on the 27th. At that time the island reported southeast winds of 80 kn and a sea-level pressure of 952.2 mb. Norris then turned more westward toward northern Taiwan. Excellent radar coverage from the island stations of Ishigakijima and Miyakojima and from Hua-Lien on Taiwan permitted JTWC to follow Norris as he tracked across Taiwan and into the Formosa Strait just north of Hsin-Chu. Surface winds of 39 kn with gusts to 64 kn on northern Taiwan were reported by Taipei at 1600 on the 27th.

Norris' track across Taiwan, change in speed, and observed weakening were classic examples of the effects of Taiwan on tropical cyclones. The



## WESTERN NORTH PACIFIC TYPHOONS

mountainous terrain of Taiwan apparently produced an induced surface low on the lee side of the mountain range, causing the marked increase in speed and the westward bend in Norris' track.

Landfall just south of Fu-Chou on mainland China occurred about 0900 on the 28th and, although penetrating deeper inland than forecast, Norris eventually recurved northeastward. The remnants linked with a frontal system that moved out over the Yellow Sea and Sea of Japan.

### TYPHOON ORCHID

On September 6 satellite imagery indicated that a tropical cyclone formation alert was required for a rapidly developing disturbance just north of Guam. A reconnaissance aircraft investigated the disturbance but was unable to close a surface circulation. Synoptic data indicated that gale-force winds existed in the eastern semicircle of the disturbance. The first warning for tropical storm Orchid was issued at 0200 on the 7th. Aircraft reconnaissance had observed 45-kn surface winds in the northeast quadrant of the storm but only 10- to 15-kn northwest winds in the western quadrant, indicating that a closed surface circulation had existed only for 6 to 12 hr before the first warning.

By the 9th Orchid had moved north into the subtropical latitudes near 23°N. Beginning at 0600 Orchid executed three high-speed cyclonic loops while maintaining an overall forward speed of 14 kn toward the north. Satellite, aircraft, and radar surveillance provided dense reconnaissance coverage of Orchid during these loops. Orchid finally stabilized on her northward track just prior to landfall on Kyushu, Japan.

In an area of heavy shipping, Orchid was causing problems. The OCEAN CONTAINER, under tow by the tug SALVADORE, broke her towline in the rough seas of Orchid just east of Shikoku, off Cape Shio. The BEA URIVAGE, laden with more than 240,000 tons of crude oil, touched bottom while standing off the coast of Japan during Orchid. She sustained minor damage.

The most tragic account was that of the DERBYSHIRE, which last reported on the 9th that she was holding due to heavy seas and the approach of typhoon Orchid. Later the typhoon passed right over this last reported position. All but one of the DERBYSHIRE's 42 crewmembers were British; two officers' wives were also on board. The ship was enroute for Kawasaki with a cargo of 158,000 tons of iron ore concentrates from Seven Island, Canada. This is one of the biggest losses under the British flag.

By the 10th maximum winds in Orchid had climbed to 80 kn as she made her way up the Ryukyus towards Kyushu. Even in port ships were having their problems. The SEA HAWK and HE TIAN collided while anchored at Mutsure, sinking the SEA HAWK. The master died, but all other crewmembers were rescued. The collision was caused by the HE TIAN apparently swinging in Orchid's gusty winds. The RYOJIN off Toba, the entrance to Ise Bay, dragged her anchor in rough seas and rammed the HYUNDAI, causing minor damage

to both ships. Among the many ship reports the following had waves of 25 to 33 ft; CARDIGAN BAY, MITSUTAMA MARU, SEA-LAND TRADE, and TAKAYAMA MARU. The AMSTELMOLEN had 39-ft swells, the BARBER PERSEAS had 52-kn winds and 52-ft swells, and the NEDLLOYD STEENKERK battled 60-kn winds and 59-ft swells. The SEA-LAND TRADE had winds near or over 50 kn from 0000 on the 10th until 0600 on the 11th. The highest was 68 kn at 1200 on the 10th near 29°N, 128°E, with a minimum sea-level pressure of 979 mb.

Orchid moved across Kyushu on the 11th and dropped to tropical-storm strength as she moved through the Sea of Japan. The storm resulted in six deaths. Torrential rains fell over Kyushu, Shikoku, and western Honshu; 15 to 23 in were recorded in several locations. Heavy rains also triggered landslides in Korea, resulting in another six deaths. About 112 fishermen were unaccounted for after high seas disabled 11 vessels. Orchid weakened and began to turn extratropical in the Sea of Japan.

### TYPHOON RUTH

Typhoon Ruth was the second of five typhoons occurring in September. Unlike the other typhoons, Ruth began as a monsoon depression in the South China Sea on September 11. For 2 days the depression remained quasi-stationary with the weak surface circulation embedded in the monsoonal trough. Synoptic data on the 13th indicated that the circulation was intensifying, and satellite imagery showed that it was forming its own outflow center.

By 1800 on the 13th the tropical depression had intensified to tropical storm Ruth and had started to track northwestward at an accelerated forward speed of movement. Ruth tracked along the southern periphery of the 500-mb ridge which was centered over southern Mainland China. She reached her first maximum intensity of 45 kn prior to landfall over Hai-Nan Tao, but quickly weakened to minimal tropical storm strength while over the island. Ruth entered the Gulf of Tonkin on the 15th and rapidly intensified to typhoon strength with a maximum surface wind of 65 kn and a minimum sea-level pressure of 975 mb.

Ruth made landfall early on the 16th south of Thanh Hou, Vietnam. Nearly half a million people were left homeless with 106 persons known dead or missing in Vietnam. Ruth also caused massive crop damages and interrupted communications in the area.

### TYPHOON PERCY

The disturbance which eventually developed into the tenth typhoon of 1980 became evident on September 13 as a focal point of cumulus banding. Aircraft reconnaissance soon afterwards found a well-developed, closed circulation with 1,500-ft flight-level winds of 35 kn and a minimum sea-level pressure of 992 mb. The first warning on tropical storm Percy was issued early on the 14th.

By this time the midtropospheric, midlatitude trough had moved eastward, and Percy's track shifted from a northward to a more climatological



## WESTERN NORTH PACIFIC TYPHOONS

west-northwestward track as the ridge extended eastward north of Percy. Between September 15 and 17 reconnaissance aircraft consistently reported decreasing heights and increasing temperatures near the 700-mb center. During this time Percy decelerated and began moving erratically. He eventually completed two tight cyclonic loops while intensifying to typhoon strength by 0000 on the 16th.

During Percy's period of erratic movement, there was speculation that a Fujiwhara interaction might develop between Percy and then tropical storm Sperry, which was located 800 mi to the east. A comparison of the postanalysis best tracts for Percy and Sperry show that the two vortices were never close enough for an interaction to occur.

Interestingly, Percy did dominate much of the low-level circulation pattern between the two systems. A reconnaissance aircraft mission flown between Percy and Sperry indicated that the wind shift from southerly to northerly flow did not occur until about 100 mi west of Sperry's surface center. An aircraft fix at 1306 on the 17th indicated a 700-mb height of 2387 m, which extrapolates to a sea-level pressure of 919 mb and supports maximum sustained surface winds of 125 kn. Approximately 12 hr later typhoon Percy made landfall on the extreme southern tip of Taiwan, which so disrupted Percy's low-level inflow that he was never able to significantly re-intensify.

At 2100 on the 18th Percy made landfall on the coast of China about 240 mi east of Canton, with estimated maximum sustained surface winds of 45 kn.

The AMERICAN AQUARIUS was in the northeast quadrant of the storm on the 18th and 19th with 45-kn winds and waves up to 20 ft.

A few days earlier the GOLDEN PEAK had sent an S.O.S. that its main generator was out of order and the engineroom was flooded. The ship was in the Taiwan Strait close to Taiwan. The steering gear had failed initially. After drifting and then anchoring, the vessel started to drag towards Taichung. Both anchors gave way as Percy approached, and early on the 18th the GOLDEN EAGLE grounded hard near Taichung's rock causeway. During the afternoon the NEDLLOYD NAPIER, some 80 mi northwest of Percy's center, encountered 55-kn winds and a 994-mb pressure. Percy weakened and slowed as he headed for mainland China. Early on the 19th he crossed the coast about 50 mi northeast of Shantou. Once inland he dissipated rapidly.

Newspaper accounts of Percy's landfall over southern Taiwan indicated 7 dead and 16 injured. Heavy rain damaged 140 homes, flooded rice fields, and destroyed banana crops.

### TYPHOON SPERRY

Typhoon Sperry developed in the monsoon trough east-southeast of Guam. The disturbance was first reported on September 12 as an area of showers and thundershowers. Sparse synoptic data did not indicate that a surface circulation existed at that time. However, the upper air pattern was favorable for continued development.

The initial warning for tropical depression 20 was issued at 0000 on the 15th, but postanalysis indicated that Sperry had actually attained tropical storm intensity by that time.

By the 16th southerly steering flow was evident south and east of Japan. A recurvature track and a weakening tendency over Japan were forecast, Sperry did, in fact, recurve, but significantly south of Japan as the subtropical ridge retreated to the southeast.

As Sperry began to recurve on the 17th, the estimated maximum surface windspeeds were consistently higher than supported by the maximum wind/minimum sea-level pressure (MSLP) relationship of Atkinson and Holliday (1977). Maximum winds of 65 kn and MSLP's of 992 mb were observed by aircraft reconnaissance. A MSLP of 992 mb corresponds to a maximum wind of 45 kn. These stronger winds were probably due to an increased pressure gradient resulting from the higher pressures at subtropical latitudes. The TAKAYAMA MARU found 33-ft swells.

Sperry did not begin to weaken significantly until the 19th because his eastward movement kept him over warmer water for a longer period of time and also kept him south of the strong mid- to upper level westerlies which would have weakened him due to strong vertical wind shear.

### TYPHOON VERNON

During the latter part of summer, tropical cyclone activity in the northwestern Pacific reaches its peak. Multiple circulations develop within the Near Equatorial Trough and two (or more) cyclones of tropical storm or typhoon strength often exist at the same time.

If one tropical cyclone is located to the northwest of another developing circulation, it usually dominates and prevents the system to the southeast from intensifying as rapidly as it normally would. This is due primarily to the upper level outflow from the system to the northwest which enhances the climatological northwesterlies and restricts the outflow channels of the cyclone located to the southeast. The cyclone to the northwest is also, generally, the older of the two and has the opportunity to establish control of the low-level inflow. The development of the system to the southeast is, therefore, delayed until the other cyclone either weakens or moves far enough away from the Tropics that its influence becomes insignificant. Typhoon Vernon and tropical storm Thelma engaged in just such an interaction during the end of September and the beginning of October.

Vernon was first observed, as an area of increased thunderstorm activity, about 200 mi northeast of Eniwetok Atoll on September 26. Tropical storm Thelma was developing north of Guam. Thelma, although never more than tropical storm strength, nonetheless had a huge associated cyclonic circulation pattern which extended to at least the 500-mb level and covered most of the area between the Philippine Islands and Guam, and as far north as southern Japan. Because Thelma covered such a large area and was located to the northwest of Vernon, she robbed him of strong

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low-level inflow and restricted the upper level outflow in his northwest semicircle.

After the 28th Vernon began tracking more north-westward as he moved into the influence of the mid-level trough which was associated with Thelma. He was steered by the southeasterly winds on the east side of this trough until October 2, when he came in contact with the southern extension of the midlatitude jetstream which accelerated him to the northeast, eventually to 53 kn. He reached typhoon strength on the 30th.

Vernon made the transition to an extratropical system quite rapidly. Ship reports off the coast of Japan indicated that the remnants of Vernon continued to maintain gale-force winds until October 5.

### SUPERTYPHOON WYNNE

The disturbance that eventually developed into supertyphoon Wynne was evident as early as September 30, although at that time it appeared to be simply enhanced convection embedded in the convergent inflow into typhoon Vernon. By October 2 the disturbance had separated from the inflow into Vernon, and the convective activity had increased in organization with good curvature and upper level outflow evident.

The small scale of the disturbance and the tightness of the circulation that characterized Wynne during most of her life prevented the circulation from appearing on synoptic analyses and led to an underestimation of severity during her formative stage. Postanalysis indicates that tropical storm strength was achieved as early as October 3.

Although typhoon Lex may have been the most interesting cyclone of the year in terms of movement, supertyphoon Wynne proved to be the most unusual in terms of intensity oscillations. Wynne's early stage of development was characterized by short periods of rapid intensification and weakening, rather than by a typical smooth, gradual intensification. From October 3 to 7 Wynne's intensity and convective activity fluctuated significantly, as she attained typhoon or near typhoon strength only to weaken to near tropical depression intensity three times following a diurnal cycle. Although not as marked as the oscillations in the observed maximum winds, the minimum sea-level pressure also exhibited a cyclical oscillation that closely approximated the periodicity of the maximum winds.

Wynne's third and final period of weakening occurred as she tracked 45 mi northeast of Guam. This weakening, combined with her small circulation, resulted in Wynne having virtually no effect on Guam. She continued to intensify rapidly following her third reintensification cycle at 1800 on the 7th, attaining supertyphoon strength just 30 hr later and a peak intensity of 150 kn (0600/09) in another 6 hr. Minimum sea-level pressure during this 35-hr period dropped from 982 mb to 890 mb - a 31-mb fall in 12 hr.

Wynne tracked north-northwestward past Guam and recurved 100 mi west of Okinawa. Her slow bend around the island brought over 2 days of

torrential rain and winds gusting to more than 65 kn. Very few injuries were reported with farm crops receiving the major wind damage. A small island 30 mi northwest of Okinawa and closer to Wynne's path reported winds of 100 kn and severe damage. It was reported that 12 boats were lost or damaged. The SEMPOR and TEST HWA HO were both blown aground; all crewmembers were rescued.

Once north of the ridge axis, Wynne tracked virtually straight east-northeastward on a heading of 070 degrees. This course kept her approximately 80 mi from the coast of Japan. Thirty- to forty-five kn winds were reported by Japanese coastal stations. Heavy rains claimed several lives and flooded over 1,000 homes.

As Wynne accelerated past Japan, the vertical wind shear and the influx of cooler, drier air resulted in rapid extratropical transition. The remnants of Wynne eventually were absorbed by a developing low-pressure system east of Japan.

### TYPHOON BETTY

Betty, the 25th significant tropical cyclone of 1980, developed east of Truk Atoll. Just prior to passing south of Guam, Betty attained typhoon strength and then continued to intensify as she tracked into the Philippine Sea. About 12 hr prior to landfall on Luzon, Betty reached her peak intensity of 125 kn. During the 18 hr that Betty tracked over north-central Luzon, she weakened considerably, but in the process caused extensive damage and loss of life. Downgraded to tropical-storm strength, Betty moved northeastward through the Bashi Channel and eventually dissipated as a weak extratropical low southeast of Japan.

Betty had her origin in a weak disturbance south of Truk which showed increased potential for development on October 27 and 28. The first warning was issued at 0000 on the 29th with maximum surface winds of 30 kn. After passing south of Guam, typhoon Betty turned westward and continued to intensify, reaching 100 kn 48 hr later at about 2000 on November 1. At 0600 on the 4th she reached her peak intensity of 125 kn.

Packing 120-kn winds at 1600 on the 4th, Betty slammed into central Luzon south of Cape San Ildefonso. Most weather observing stations stopped reporting prior to Betty's approach, so her actual intensity as she crossed Luzon can only be inferred. However intense Betty may have been, there is little doubt that she was one of the most destructive typhoons of recent history. Initial reports received several days after Betty crossed Luzon indicated at least 81 people dead, thousands homeless, and extensive crop damage from flooding and mudslides. The Cagayan Valley in northern Luzon, hard hit by Betty, lost most of its rice crop from floodwaters which rose to rooftop level in some areas. Two ships under tow, the GENERAL SAN MARTIN and ANCAP CUARTO, took on water during the typhoon and suffered extensive damage. The ANCAP CUARTO was driven aground east of Baguio.

As Betty weakened over Luzon, the ridge that influenced her track into the Philippines broke down, thus allowing her to drift northward along the Cordillera central mountains and eventually to

## WESTERN NORTH PACIFIC TYPHOONS

be drawn into the weak short-wave trough which had stalled off the coast of Taiwan. Emerging from Luzon as a 45-kn tropical storm, Betty never regained her earlier fury as she moved east of Taiwan and the Ryukyu Islands, undergoing an extratropical transition just prior to the 8th. As an extratropical system, the remnants of Betty did not persist long. This once powerful typhoon was last observed 12 hr later dissipating southeast of Honshu, near 32°N, 143°E.

### TYPHOON DINAH

Dinah, the final typhoon of the 1980 season and the third tropical cyclone this season to threaten Guam, began to develop in mid-November as a focal point of cumulus banding embedded in the monsoon trough oriented east-west near Kwajalein. The first warning on tropical storm Dinah was issued at 0600 on November 21. At that time, having established a well-developed outflow to all quadrants, Dinah intensified rapidly and subsequently reached typhoon strength at 1800, just 12 hr after the initial warning.

By the time Dinah intensified to a typhoon, she posed a definite threat to Guam within 48 hr; thus, the decision was made to evacuate military aircraft from the island. Dinah was forecast to pass just off the north-eastern tip of Guam, but

the forecast was amended to near Saipan. Because Dinah was so compact, this small change in track was enough that Guam received very little wind as Dinah passed to the northeast, but Saipan and nearby Tinian received typhoon-force winds and sustained extensive damage.

Dinah continued to intensify rapidly as she began to move toward the northern Marianas Islands. She subsequently crossed the northeastern portion of Saipan at 1845 on the 22d and reached maximum intensity at 2100, with maximum sustained winds of 100 kn and gusts to 130 kn. Dinah began to recurve to the north on November 23. She then weakened and accelerated to the northeast in response to a midtropospheric long-wave trough which was moving eastward past Marcus Island on the 24th. Dinah transitioned to an extratropical cyclone by midday on the 25th.

Damage to the islands of Saipan and Tinian was massive, with 60 homes destroyed and another 214 suffering damages. Saipan, in the aftermath of typhoon Dinah, was completely without power for several days and 85 percent of the water system was not functioning. The Governor of Saipan estimated damages of \$7 million. Shortly thereafter the area was declared a major disaster area, enabling the area to qualify for federal disaster fund relief.



Table 1.--Frequency of typhoons by month and year

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Average (1945-58)	0.4	0.1	0.3	0.4	0.7	1.1	2.0	2.9	3.2	2.4	2.0	0.9	16.3
1959	0	0	0	1	0	0	1	5	3	3	2	2	17
1960	0	0	0	1	0	2	2	8	0	4	1	1	19
1961	0	0	1	0	2	1	3	3	5	3	1	1	20
1962	0	0	0	1	2	0	5	7	2	4	3	0	24
1963	0	0	0	1	1	2	3	3	3	4	0	2	19
1964	0	0	0	0	2	2	6	3	5	3	4	1	26
1965	1	0	0	1	2	2	4	3	5	2	1	0	21
1966	0	0	0	1	2	1	3	6	4	2	0	1	20
1967	0	0	1	1	0	1	3	4	4	3	3	0	20
1968	0	0	0	1	1	1	1	4	3	5	4	0	20
1969	1	0	0	1	0	0	2	3	2	3	1	0	13
1970	0	1	0	0	0	1	0	4	2	3	1	0	12
1971	0	0	0	3	1	2	6	3	5	3	1	0	24
1972	1	0	0	0	1	1	4	4	3	4	2	2	22
1973	0	0	0	0	0	0	4	2	2	4	0	0	12
1974	0	0	0	0	1	2	1	2	3	4	2	0	14
1975	1	0	0	0	0	0	1	3	4	3	2	0	15
1976	1	0	0	1	2	2	2	1	4	1	1	0	15
1977	0	0	0	0	0	0	3	0	2	3	2	1	11
1978	0	0	0	1	0	0	3	2	4	3	2	0	15
1979	1	0	1	1	0	0	2	2	2	2	1	1	13
1980	0	0	0	0	2	0	3	2	5	2	1	0	15
Average (1959-80)	0.25	0.05	0.13	0.70	0.85	0.90	2.80	3.30	3.25	3.10	1.60	0.55	17.6

Table 2.--Frequency of tropical storms and typhoons by month and year

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Average (1945-58)	0.4	0.1	0.4	0.5	0.8	1.3	3.0	3.9	4.1	3.3	2.7	1.1	21.6
1959	0	1	1	1	0	0	3	6	6	4	2	2	26
1960	0	0	0	1	1	3	3	10	3	4	1	1	27
1961	1	1	1	1	3	2	5	4	6	5	1	1	31
1962	0	1	0	1	2	0	6	7	3	5	3	2	30
1963	0	0	0	1	1	3	4	3	5	5	0	3	25
1964	0	0	0	0	2	2	7	9	7	6	6	1	40
1965	2	2	1	1	2	3	5	6	7	2	2	1	34
1966	0	0	0	1	2	1	5	8	7	3	2	1	30
1967	1	0	2	1	1	1	6	8	7	4	3	1	35
1968	0	0	0	1	1	1	3	8	3	6	4	0	27
1969	1	0	1	1	0	0	3	4	3	3	2	1	19
1970	0	1	0	0	0	2	2	6	4	5	4	0	24
1971	1	0	1	3	4	2	8	4	6	4	2	0	35
1972	1	0	0	0	1	3	6	5	4	5	2	3	30
1973	0	0	0	0	0	0	7	5	2	4	3	0	21
1974	1	0	1	1	1	4	4	5	5	4	4	2	32
1975	1	0	0	0	0	0	2	4	5	5	3	0	20
1976	1	1	0	2	2	2	4	4	5	1	1	2	25
1977	0	0	1	0	0	1	4	1	5	4	2	1	19
1978	1	0	0	1	0	3	4	7	5	4	3	0	28
1979	1	0	1	1	1	0	4	2	6	3	2	2	23
1980	0	0	0	1	4	1	4	2	6	4	1	1	24
Average (1959-80)	0.55	0.35	0.45	0.85	1.27	1.55	4.50	5.35	5.00	4.15	2.30	1.15	27.5

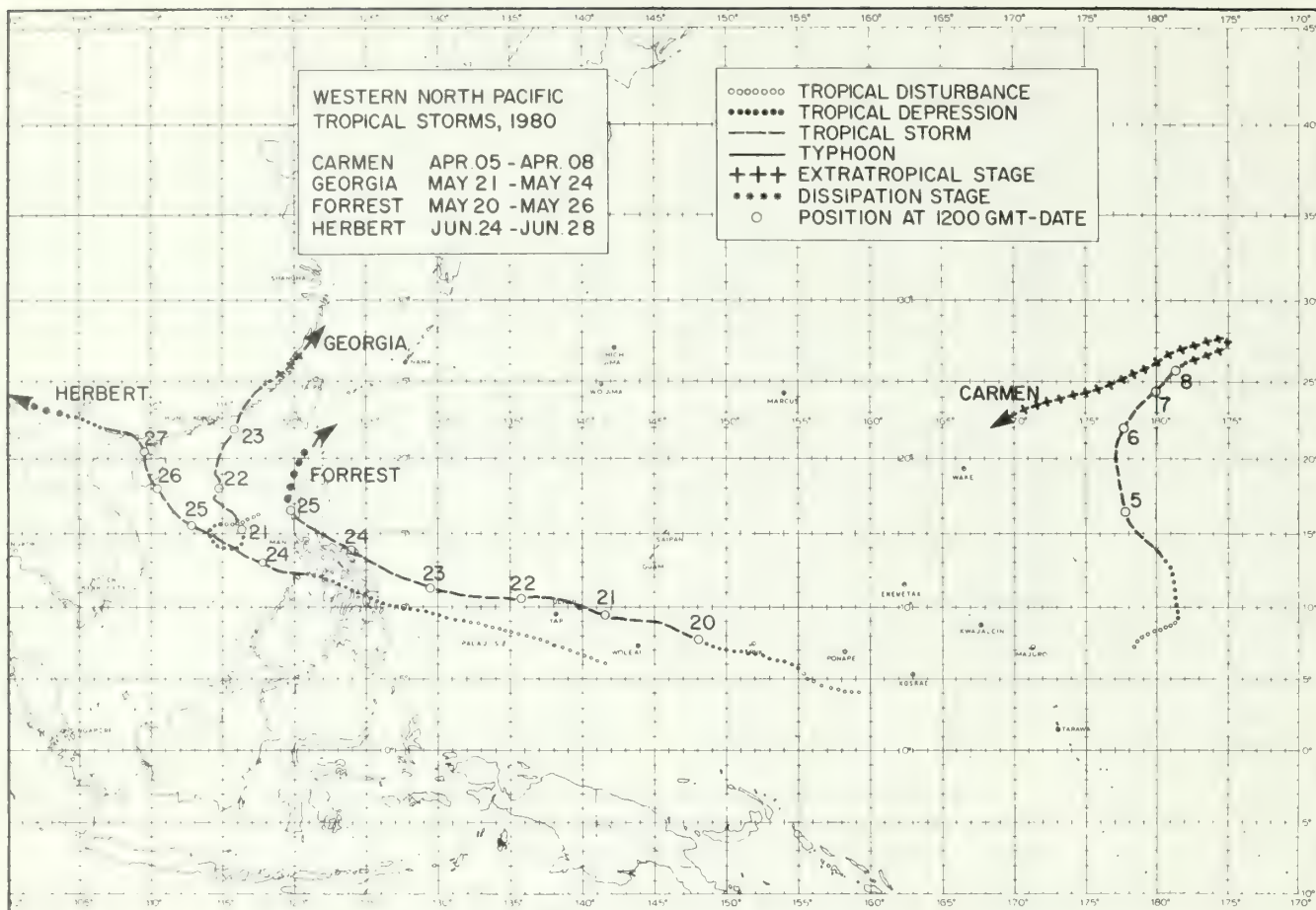


Figure 1.--Tropical storm tracks, 1980.

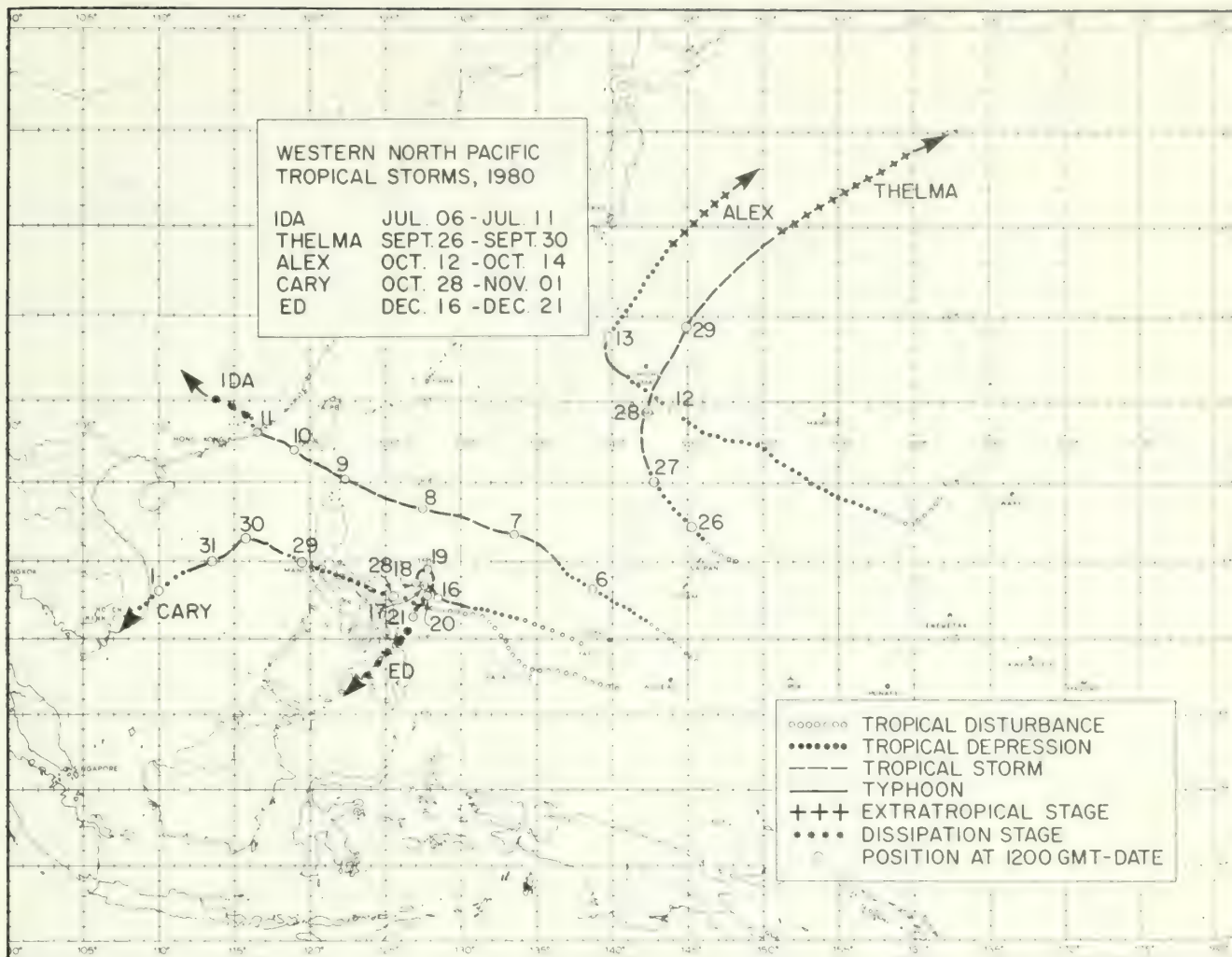


Figure 2. --Tropical storm tracks, 1980.



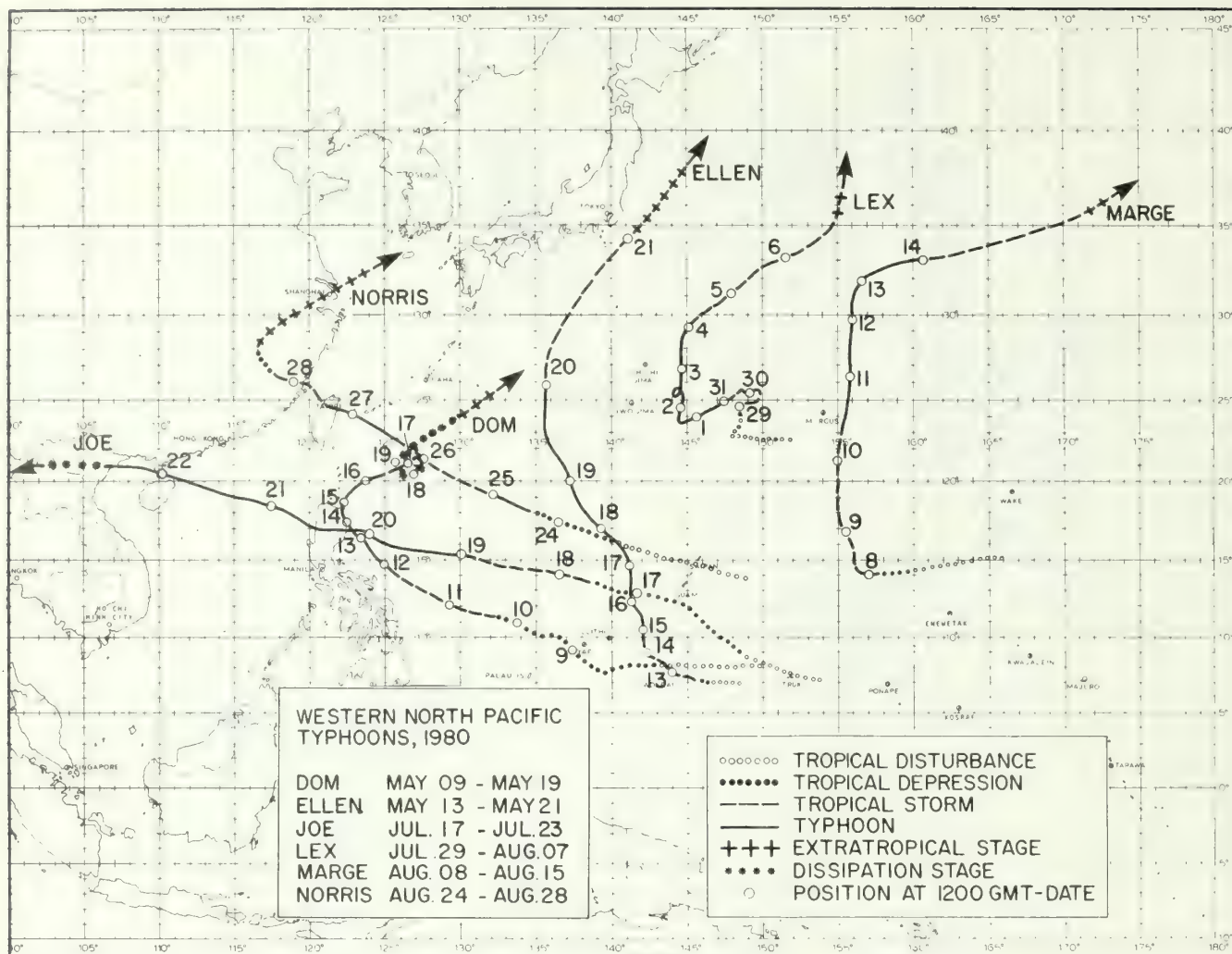


Figure 3.--Typhoon tracks, 1980.

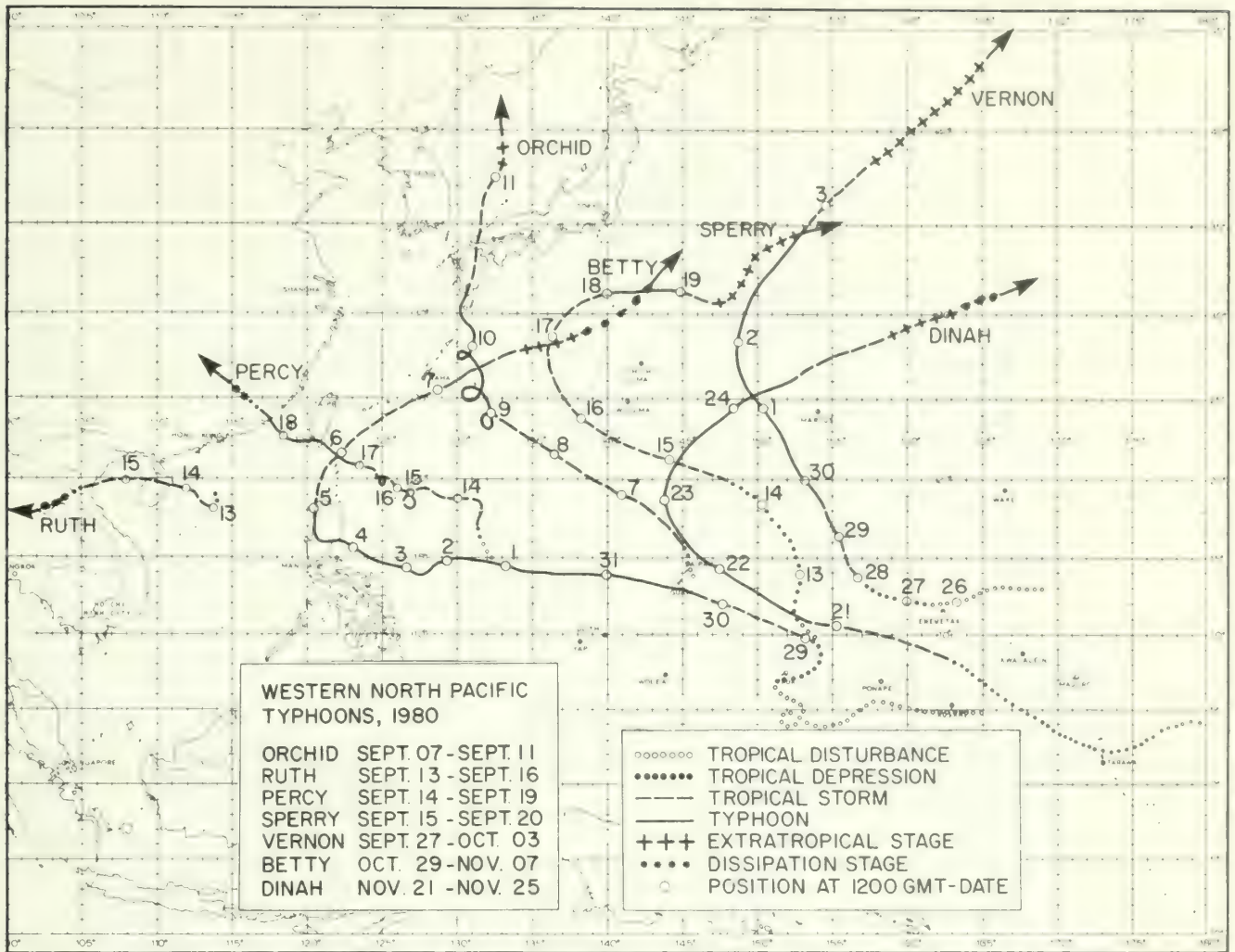


Figure 4. --Typhoon tracks, 1980.

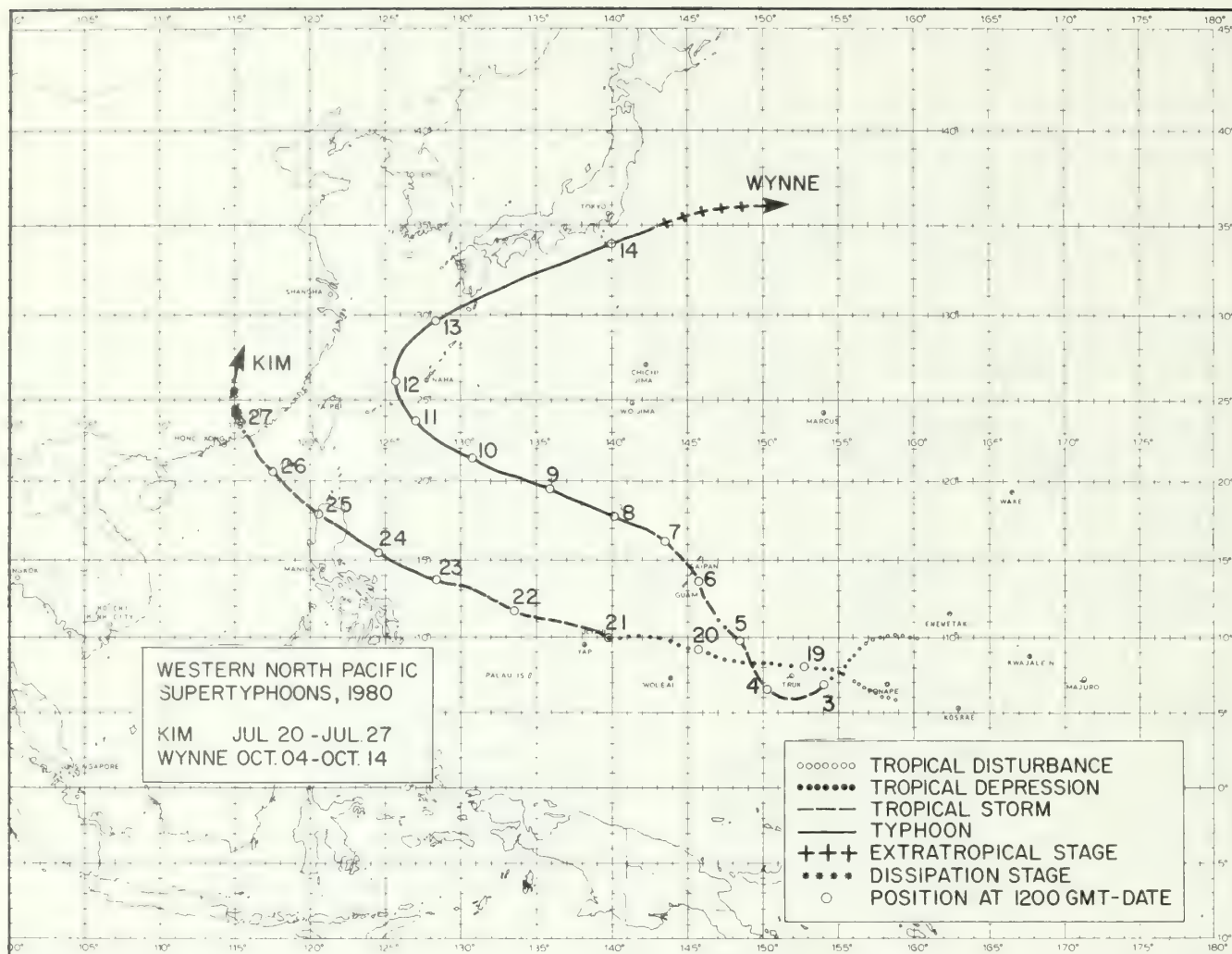


Figure 5. --Supertyphoon tracks, 1980.



# CENTRAL NORTH PACIFIC TROPICAL CYCLONES, 1980

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Two tropical cyclones affected the central North Pacific this year--Carmen and Kay. Both reached storm strength in other areas of responsibility and then moved into the central Pacific. The embryo of Carmen was first spotted west of 180°, then moved east of 180°, and then back into the western area before reaching storm strength and being named Carmen. Table 1 gives some statistics of the cyclones.

## TROPICAL STORM CARMEN - APRIL 4-8

Tropical storm Carmen began as an active cluster of convective activity centered near 4°N, 178°W, on April 3. The Central Pacific Hurricane Center (CPHC) and its supporting National Earth Satellite Service (NESS) unit classified the developing activity as a tropical depression with winds of 25 to 30 kn. The Weather Service Forecast Office, Honolulu, gave official recognition of the tropical depression's existence in their regularly issued High Seas Warnings and Forecasts from 1700 on the 3d to 1700 on the 4th. During this period the low center moved due north at about 12 kn and exhibited intensifying characteristics.

By 1700 on the 4th the storm showed a drift toward the northwest. CPHC in concert with the Joint Typhoon Warning Center (JTWC) deemed it appropriate to begin issuing tropical cyclone bulletins on the 5th. This was the beginning of tropical depression 2 (T.D. 2).

T.D. 2 intensified rapidly to tropical storm Carmen by 1200 on the 5th and reached its maximum intensity of 60 kn by 1200 on the 6th.

Upon reaching latitude 20°N, Carmen came to an abrupt halt for nearly 24 hr, during which time she weakened and ultimately met her demise. The system remained over water the entire time and had no direct affect on any islands. There were no reports of damages or casualties to ships.

## HURRICANE KAY - SEPTEMBER 15-30

Hurricane Kay (T.D. 12) began near 13°N, 103°W, on September 15. The first advisory as issued by the Eastern Pacific Hurricane Center (EPHC) at 0600 on the 16th. The cyclone intensified rapidly to tropical storm Kay and subsequently to hurricane Kay.

Kay crossed into the CPHC area of responsibility (140°W) between 1200 and 1800 on the 24th with maximum sustained winds of 80 kn. Kay continued to move northwestward for the next 48 hr and then became quasi-stationary. At this time, the eye of Kay was obscured, so her movement for the next 24 hr was uncertain. It appeared that Kay had become stationary, but she was actually doing a small loop prior to continuing her westward movement. The steering toward the west was influenced by the rapid movement to the east of higher latitude troughs, causing Kay's direction of movement to vary between southwest and northwest.

Kay was downgraded to a tropical storm at 1200 on the 27th and to a tropical depression at 0600 on the 29th. The storm met its demise under the influence of a deep upper level trough as it moved toward the Hawaiian Islands. As a tropical depression the remains of Kay passed within 200 mi to the northeast of Honolulu moving on a northwesterly track.

Table 1. --Central North Pacific tropical cyclone data, 1980<sup>1</sup>

Name	Dates	Maximum class	Maximum sustained winds (kn)	Total hours observed
Carmen	April 7-8	Tropical storm	E50 (NESS)	24(TS), 18(TD)
Kay	Sept. 24-30	Hurricane	E75 (NESS)	66(H), 42(TS) 30(TD)

<sup>1</sup>Data pertains only to period storm was in the central Pacific.

Total hours observed per class: Hurricane (H) - 66  
Tropical storm (TS) - 66  
Tropical depression (TD) - 48

Chart I. Departure from Normal of Annual Temperature ( $^{\circ}\text{F}$ ) at Surface, 1980.

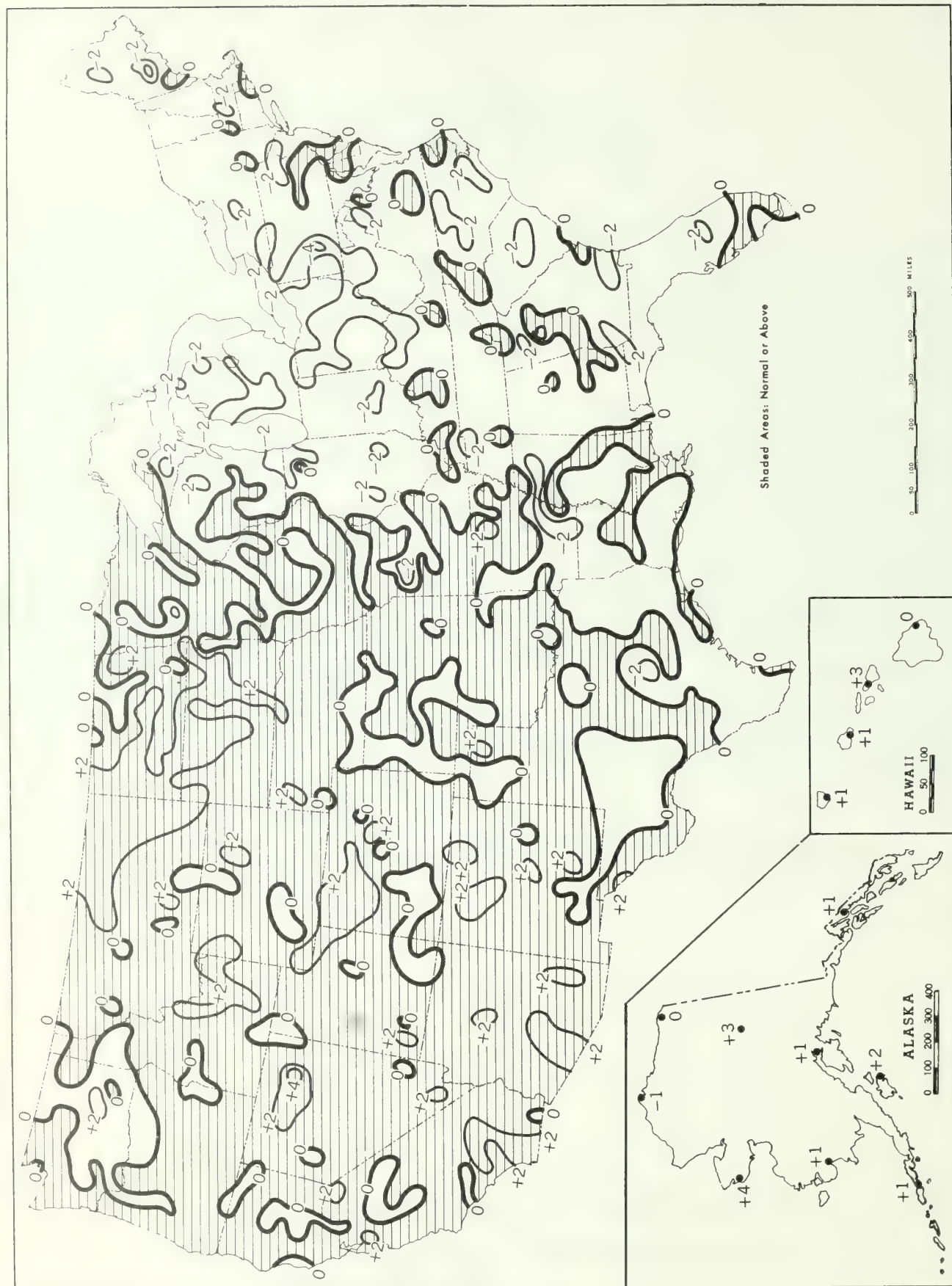


Chart II. Total Annual Precipitation (inches), 1980.

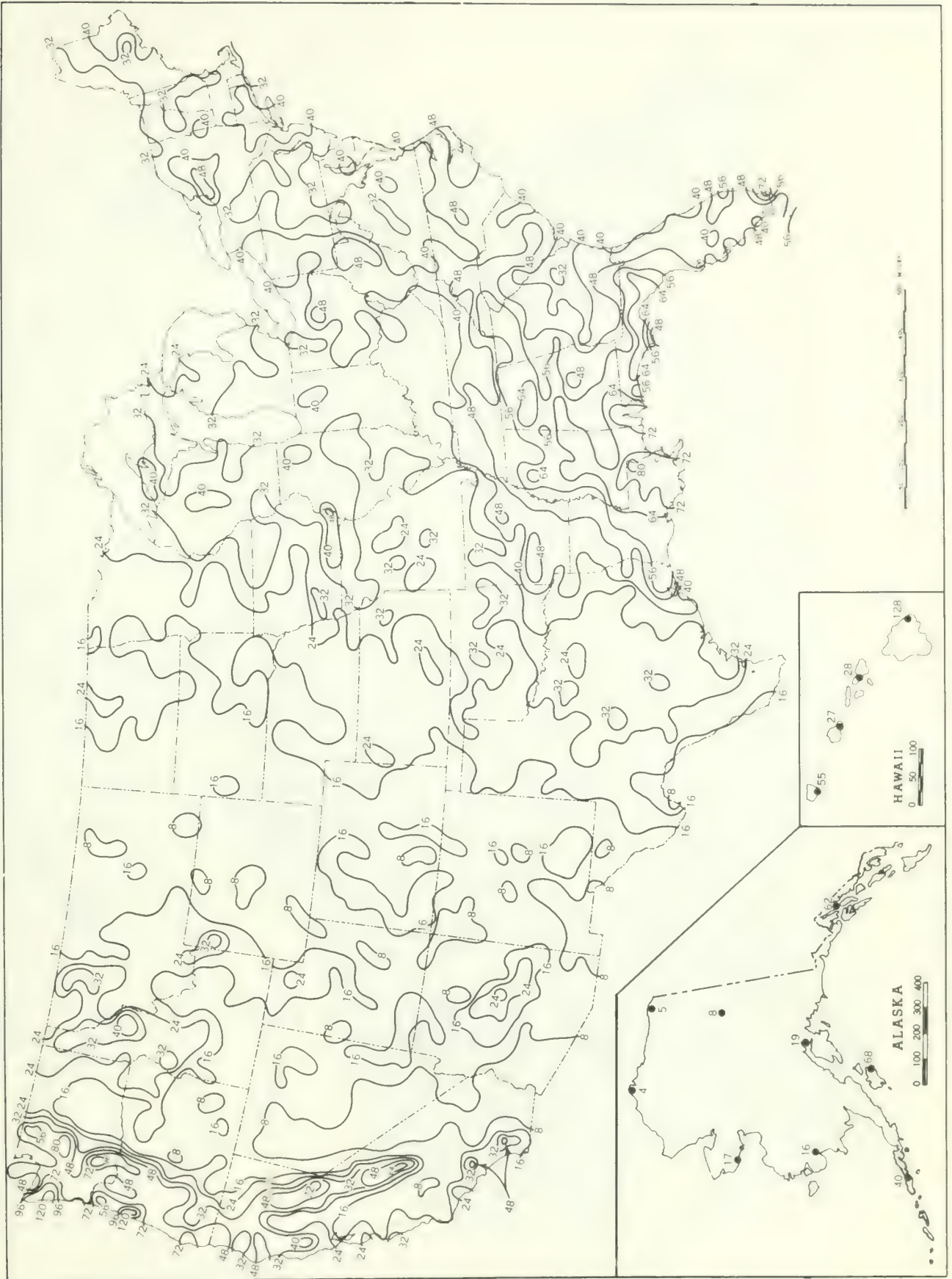
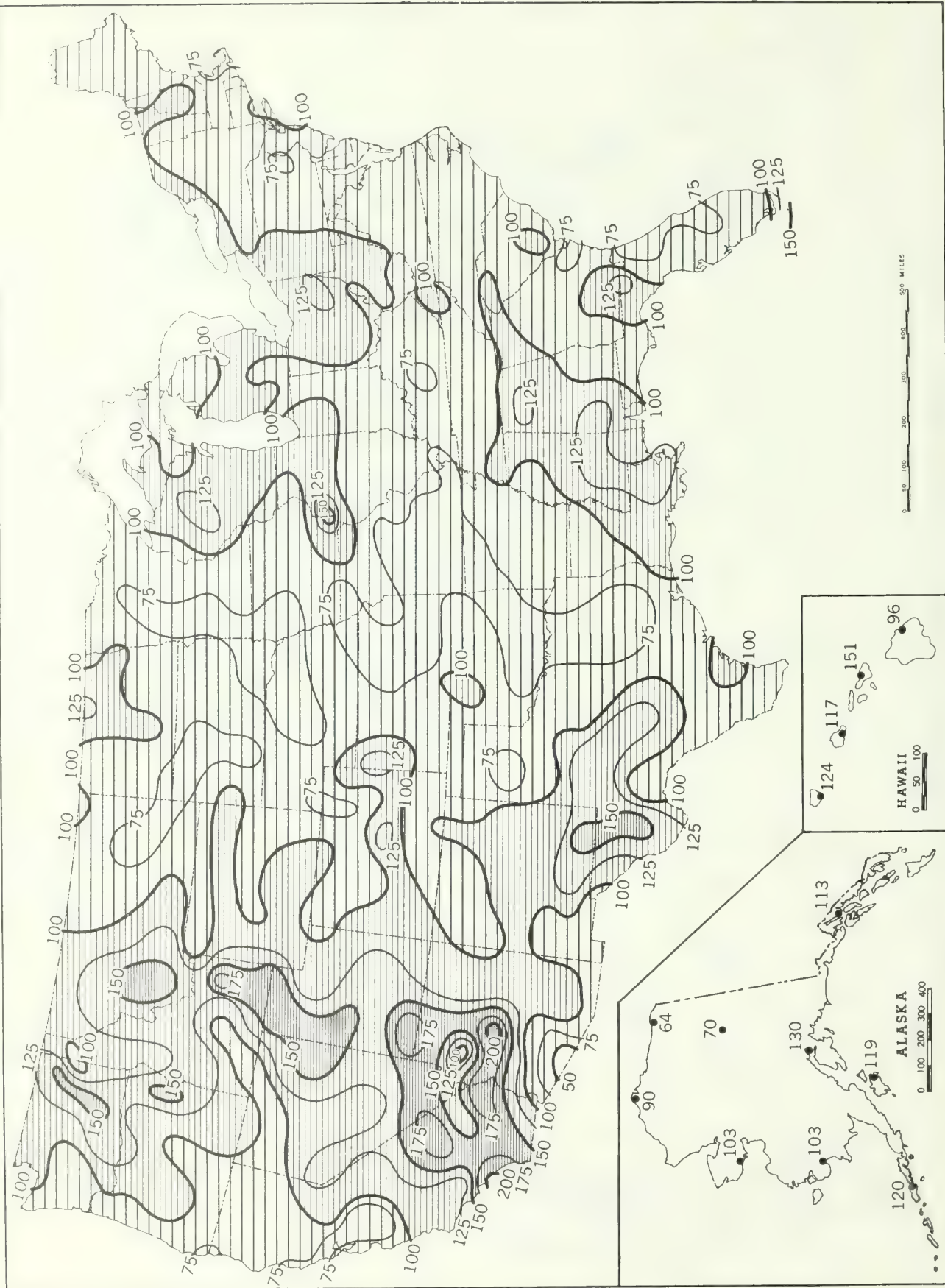




Chart III. Percentage of Normal Annual Precipitation, 1980.











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